International Surgery Journal
Padmasree G. Int Surg J. 2019 Jun;6(6):1965-1971
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20192098

Original Research Article

A clinical study on obstructed inguinal hernia: a descriptive study on 53 cases

Gaddam Padmasree*

Department of Surgery, NTR University of Health Sciences, ACSR Govt. Medical College, Nellore, Andhra Pradesh, India

Received: 22 March 2019
Revised: 03 May 2019
Accepted: 06 May 2019

***Correspondence:**
Dr. Gaddam Padmasree,
E-mail: padmasri155155@gmail.com

ABSTRACT

Background: Inguinal hernias are the common causes of surgical admissions and referral of patients from primary physicians. Although we have made a great progress in treating hernia the management of its complications has progressed only a little. The aim of study was to determine the various modes of presentation, clinical features, diagnostic and therapeutic strategies and to evaluate the post-operative outcome in obstructed hernia surgeries.
Methods: After obtaining written and informed consent from the patients, cases for the study were randomly selected from patients admitted to this tertiary care hospital for surgical intervention of inguinal hernias during the period between 2015 and 2017. Cases with inguinal hernias which had signs of obstruction and inability to reduce the hernia are taken up for emergency surgical intervention within 6-8 hours.
Results: 53 obstructed inguinal hernia patients were evaluated and found that, incarceration was the commonest complication seen in 92.45% of cases followed by strangulation (7.54%). Viable bowel was seen 88.67% of cases. Bowel resection and end-to-end anastomosis was done in all cases of non-viable bowel. The commonest post-operative complication encountered in the study was wound infection (9.43%) and scrotal seroma (9.43%).
Conclusions: The most common content was small bowel followed by omentum (52.8% and 35.8% respectively). Wound infection and seroma were the most common complications (9.43%) and mortality was observed in two patients (3.7%) and the causes of death were sepsis and acute respiratory distress syndrome.

Keywords: Obstructed inguinal hernia, Strangulated inguinal hernia, Hernioplasty, Bassini's repair, Mesh repair

INTRODUCTION

Inguinal hernias are one of the common causes of surgical admissions and referral of patients from primary physicians. Hernia describes the bulge or protrusion of an organ or a tissue through an abnormal opening in the abdominal wall. Although there are many types of hernia, 75% of hernias occur in the inguinal region.[1] It may be said with assurance that inguinal hernia is among the oldest of man's maladies and one of the first to be recognized, so inescapable in its appearance and so tell-tale the discomfort.[2] In the period before Bassini started doing hernia surgery the recurrence rate was 100% by 4 years.[3] Now it is less than 1%.

Especially, the advent of laparoscopic hernia repairs has changed the scenario. Laparoscopy is used in emergency inguinal surgeries also. Although we have made a great progress in treating hernia the management of its complications has progressed only a little. The post-operative complications and mortality is alarmingly high especially in the aged people in case of strangulated inguinal hernia.[4,5] Obstructed inguinal hernia is one complication inguinal hernia that precedes strangulation.[6]

If one could interfere at the stage of obstruction and treat it in correct time, we can avoid major morbidity and mortality.[7,8]

The aim of study was to determine the various modes of presentation, clinical features, diagnostic and therapeutic strategies and to evaluate the post-operative outcome in obstructed hernia surgeries in our setup.

METHODS

After obtaining written and informed consent from the patients, cases for the study were randomly selected from patients admitted to this ACSR Govt. Hospital, Nellore for surgical intervention of inguinal hernias during the period between 2015 and 2017.

Inclusion criteria

Inclusion criteria were all patients above 14 yrs of age admitted for obstructed inguinal hernia will be included

Exclusion criteria

Exclusion criteria were patients with normal reducible inguinal hernia will be excluded.

Examination

The diagnosis of inguinal hernia was made by taking thorough history and physical examination. All cases were examined thoroughly and the findings were recorded. In all cases complete general physical examination, local examination and systemic examination was done.

Investigations

The following investigations were performed in each case. Hematological: Hb%, TLC, DC, ESR, Biochemical: RBS, RFT, LFT. Radiological: Ultrasound abdomen and chest X-ray, X-ray abdomen erect. Though imaging is rarely needed to establish diagnosis of inguinal hernia, it is very useful in cases of uncertain diagnosis, complicated hernias and recurrent hernias. After complete workup, clinical diagnosis was ascertained and patients underwent emergency inguinal hernia repair. All patients were informed of the risks and benefits of the procedure in their native language and the same was documented. Cases with inguinal hernias which had signs of obstruction and inability to reduce the hernia are taken up for emergency surgical intervention within 6-8 hours. The aim of emergency surgical intervention is:

- Save the contents going into strangulation by relieving obstruction
- Reduce the contents.
- Repair of the inguinal canal to prevent recurrence.

Emergency preparation of the patient was done by initial resuscitation of the patient with crystalloids to maintain haemodynamic stability, Nasogastric tube aspiration was done and bladder catheterization was performed to monitor the urine output and cardiac efficiency of the patient was assessed if needed with 2D-Echo cardiography.

Anaesthetic management

All cases were performed under spinal anesthesia except for one case in which surgical intervention was done under general anesthesia, the indication being, haemodynamic instability.

Surgical technique

Modified Bassini's repair with mesh fixation was performed in 40% of the cases whereas herniorrhaphy along with omentectomy was done in 9 cases and herniorrhaphy along with resection and anaestomosis was done in 4 cases. The contents are examined for viability. Senior Surgeons operated all cases. All patients received standard care in the peri-operative period.

Post-operative period

The patient was nursed in bed on the day of operation. He is mobilized to walk the next day. Drain was removed after 48hrs. Chest physiotherapy was given. Antibiotics were administered for the period of hospital stay and Foley's catheter was removed after 3 days, to prevent contamination of wound and dressing. The cord was routinely palpated until the patient was discharged.

RESULTS

This was a prospective clinical study comprises the statistical analysis of 53 obstructed inguinal hernias done in a tertiary care hospital during the two years period of 2015-2017, regarding various presentations and management.

Among the general surgical admissions, Hernias were 2190 which constitute 1.33%, inguinal hernias were 1545 which constitute 0.94%. Total number of emergency general surgical admission's during the study period were 3,078 which constitutes 32% of the total admission's in surgical wards.

The number of uncomplicated hernias admitted in general surgery during the above study period were 93. Number of complicated inguinal hernias were 53 which constitutes 0.36% of all surgical admissions and 1.3% of all emergency general surgical admissions. 3.43% of all inguinal hernias and 66% of femoral hernias went in to obstruction, data was represented in Table 1. Although inguinal hernias are more, than femoral or ventral hernias the percentage of obstruction is only 3.43%, represented in Table 2.

Table 1: Percentage of total complicated hernia admissions.

Year	Emergency surgical admissions (no.)	Total complicated hernia admissions (no.)	Percentage (%)	Total complicated inguinal hernias (no.)	Percentage (%)
2015-2016	2082	48	2.30	31	3.78
2016-2017	1985	45	2.26	22	3.03
Total	4057	93	2.29	53	3.43

Table 2: Type of hernia and distribution of location.

Type of hernia	N (%)	Side	N (%)
Indirect hernia	47 (88.67)	Right	40 (75.47)
Direct hernia	6 (11.32)	Left	13 (24.52)

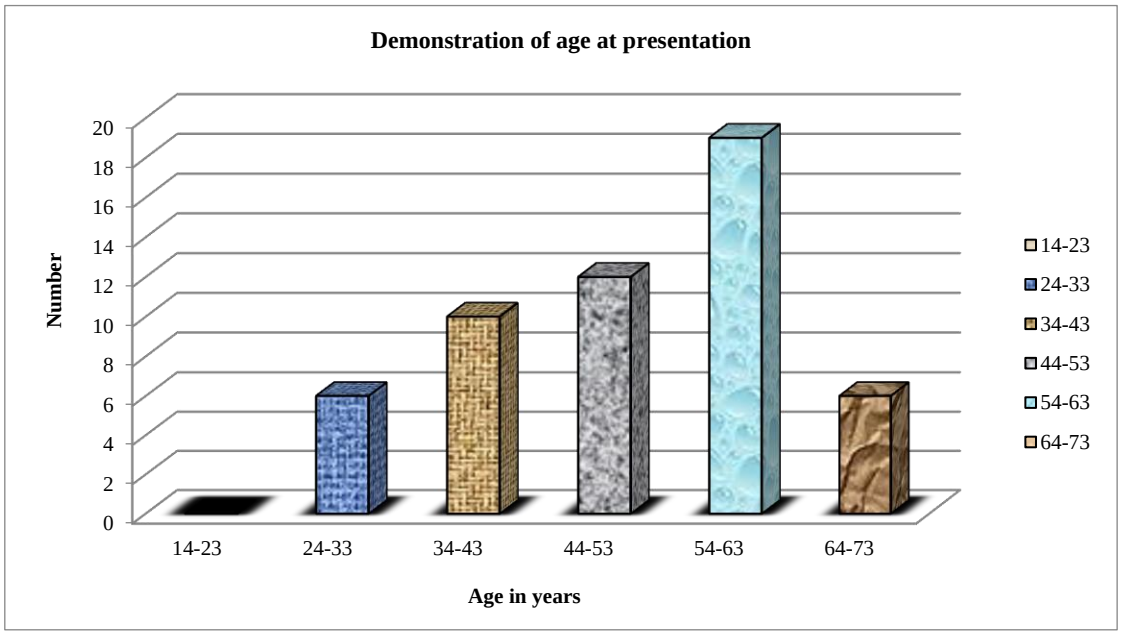

Figure 1: Age at presentation.

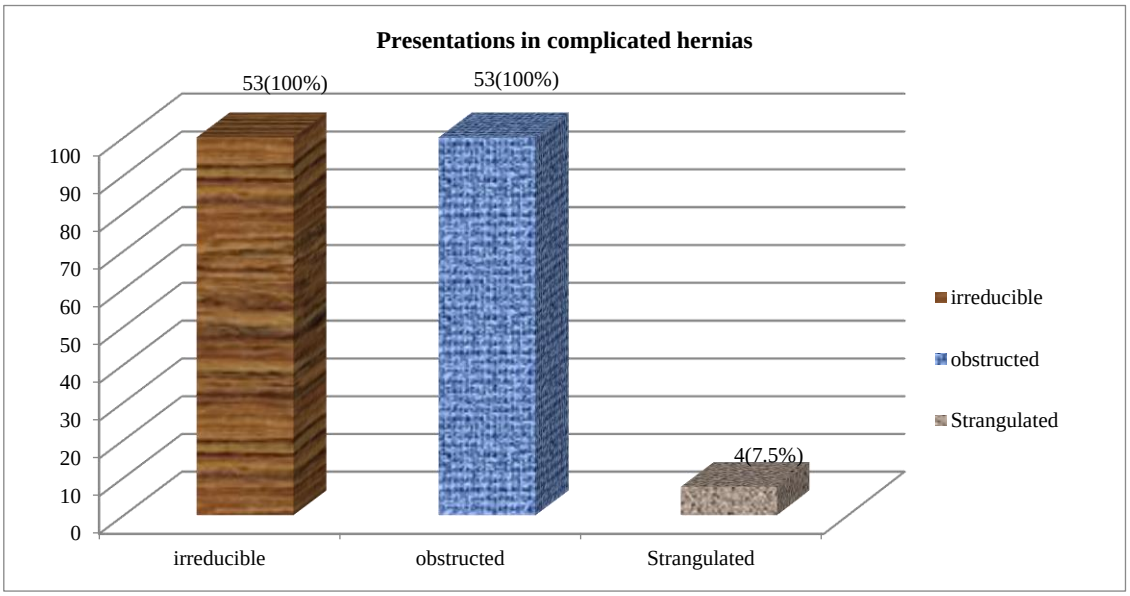

Figure 2: Clinical presentation.

Age and gender

The case with least age is 14 yrs and highest is 73 yrs as represented in Figure 1. Over the period of study only male patients were presented with obstructed inguinal hernia and none of the females presented with inguinal hernias.

Site

Out of 53, 40 cases are right side obstructed inguinal hernias whereas 13 are of left Side type represented in Table 2.

According to the present study, 53 (100%) complicated inguinal hernias were obstructed and 7 (14.5%) went into strangulation as represented in Figure 2.

Clinical duration

Most cases had a duration ranging from 3 months to 10 years of swelling in the groin. In one third of cases, there is history of reducibility of swelling on lying down or taxis by the patient himself, which have got obstructed suddenly or gradually. Adhesion of contents with sac, or at the neck region can be the causative factors in these cases. In cases with omentum as content the duration is very long. The duration of obstruction ranges from 6-48 hours, represented in Table 3 according to their percentages. Cases which presented after 48 hours had more post-operative complications.

Table 3: Clinical character: duration of obstruction of inguinal hernias.

Duration	No of cases	Percentage (%)
Less than 1 day	25	47.16
1–2 days	13	24.52
2–3 days	11	20.75
>3 days	4	7.54

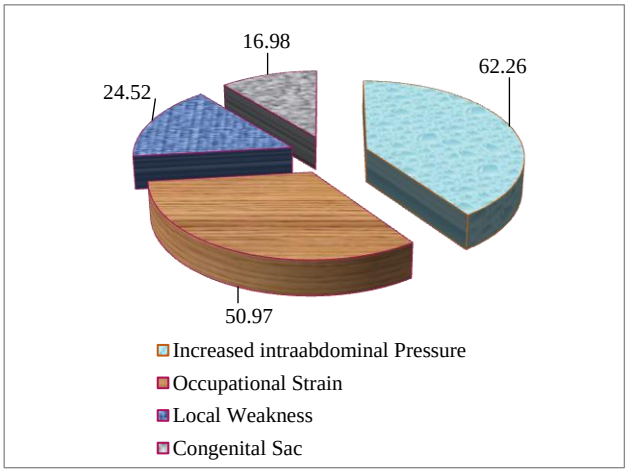

Figure 3: Etiological factors.

Site of obstruction

The obstruction is at internal inguinal rings in 43 cases, in inguinal canal in 3 cases and at superior inguinal ring in 7 cases.

Etiological factors

Various etiological factors responsible for the development of hernias were depicted in the Figure 3.

Clinical modes of presentation (depicted in Figure 4):

- *Mode of onset:* In 60% of cases the mode of onset is sudden.
- *Pain:* Present in all most all the cases. Pain is initially dragging type in nature. It is intermittent colicky type in 75% of cases could be due to intestinal obstruction. There is constant aching pain at the region of swelling in rest of the 25% of cases.
- *Swelling:* Inguinoscrotal swelling is present in all cases
- *Vomiting:* 30 cases presented with history of vomiting. The number of vomiting range from 2-10, they are projectile containing food particles in 80% cases and Bile in 40% cases.
- *Constipation:* Absolute constipation was present in 8 cases. The main duration of constipation is 1 to 3 days.
- *Distension of abdomen:* In 22% of cases there is history of distension of abdomen, which gradually increased and associated with pain abdomen.

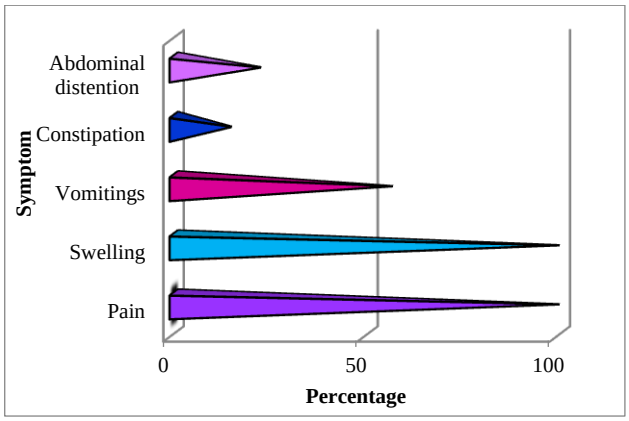

Figure 4: Clinical modes of presentation.

Clinical procedure

All complicated hernias were operated on emergency basis. According to the presentation and contents of the hernial sac, the procedures performed were hernioplasty, herniorrhaphy with omentectomy, modified bassini's repair of the posterior wall and bowel resection with end to end anastomosis for non-viability of bowel as a content of hernial sac. Type of clinical procedure and viability of

hernial sac contents was represented in Table 4 and Figure 5 respectively.

Table 4: Clinical procedure.

Mode of surgery	No of cases	Percentage (%)
Hernia contents replacement in abdomen with hernioplasty	25	47.16
Release of adhesion with replacement of sac contents in abdomen with hernioplasty	15	28.30
Omentectomy and modified Bassini's repair	9	16.98
Bowel resection, end to end anastomosis and Modified Bassini's repair	4	7.54

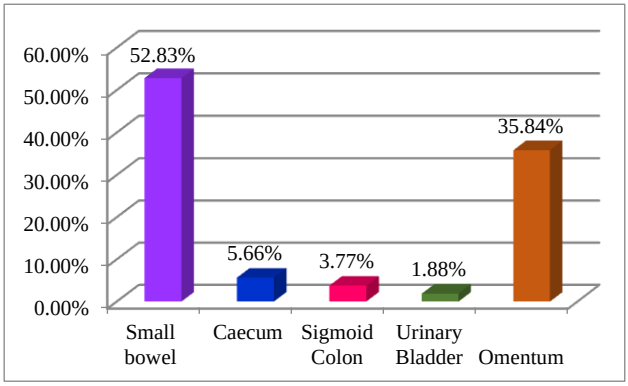

Figure 5: Contents of the hernial sac.

Post-operative complications

The following post-operative complications occurred in this series and were represented in Table 5. Post-operative seroma was present in 5 patients, hematoma was present in 1 patient, infection present in 5 cases.

Respiratory disturbances comprised of non-expectorant cough without dyspnea was observed in 3 cases. Paralytic ileus found in 1 case. Paresthesia was observed in 3 cases.

Mortality

Death occurred in 3.77% of obstructed inguinal hernia cases treated. In 88% of cases the contents are viable whereas in 20% of cases the contents of sac are nonviable.

Recurrence

In this series of study of obstructed inguinal hernia where the hernia repair was done by modified Bassini's technique and herniorrhaphy, with 1 year of follow-up, no recurrence was observed.

Table 5: Postoperative complications.

Complication	Mesh repair	Modified Bassini's repair
	N (%)	**N (%)**
Post-operative seroma	2 (3.77)	3 (5.66)
Post-operative hematoma	-	1 (1.88)
Post-operative wound infection	1 (1.88)	4 (7.54)
Respiratory disturbances	1 (1.88)	2 (3.77)
Paresthesia	2 (3.77)	1 (1.88)
Paralytic ileus	-	1 (1.88)
Death	-	2 (3.77)
Total	6 (11.32)	14 (26.41)

Data expressed as absolute numbers and percentage.

DISCUSSION

A randomized clinical study of 53 cases of obstructed inguinal hernia was conducted at the Department of General Surgery of ACSR government hospital, Nellore for a period of 2 years between 2015 to 2017. The outcomes of the present study correlated well with the existing clinical trials.

In Hariprasad et al conducted a clinical study on the complicated presentations of groin hernias and reported that the incidence was highest in the age groups between 44-53 years whereas in the present study the incidence was highest in 54-63 years age group which correlates with the findings of Irizarry et al; study who did a population based trial on the trends in inguinal hernia surgery.[9,10] Similar studies conducted by Pollock et al and Andrew et al on the outcomes of complicated hernias reported that the mean age of patients with complicated hernias was 55 yrs and 65 yrs respectively, the findings were consistent with the present study.[11,12]

In the present study, the incidence of inguinal hernias was confined to male patients 100% and there was no single case reported in a female during the study period. In standard literature, there was male preponderance on the incidence of acute groin hernias which was consistent with our study.[13] In a prospective study conducted by Shakya et al, on the outcome of complicated hernias, the incidence of acute groin hernias was reported to be higher in males than females, 88.5% in males and 11.5% in females, also consistent with the observations of our study.[14]

The present study reported the incidence of right sided hernias to be about 75.47% and left sided hernias to be about 25%, the findings which had correlation with the

studies of Kulah et al (right versus left: 33,50% vs 17,40%) and Alverez et al (right versus left: 16.08% vs 7.82%) both studies conducted on incarcerated inguinal hernias.[15,16]

In the present study 47.16% of cases were treated by reduction and hernioplasty and in 28.30% reduction of contents with modified Bassini's repair was done whereas 75% of cases in Hariprasad et al's study and 82.6% of cases in Prakash et al's study was treated by herniorrhaphy and no mesh repair was done represented in Table 8. The duration of intestinal obstruction ranged from 6 hrs to 3 days. Intestinal obstruction lasting over two days resulted in gangrenous intestine and needed bowel resection in four patients in this study, the results of which were comparable with the Eze et al, study on obstructed inguinal hernias.[17] Postoperative complications are proportional to the duration of hernia.

Goyal et al, in their prospective study on uncommon contents of inguinal hernial sac, reported that small bowel as the most common content in inguinal hernias followed by omentum, the observations are similar to the findings of present study.[18] Bekoe in his prospective review of 118 patients with incarcerated/strangulated inguinal hernias stated that he could find "no definite criterion" to differentiate incarcerated hernia with viable contents from the non-viable contents and cannot be diagnosed on clinical grounds.[19] Obstruction is associated with 50% risk of bowel ischemia. Only 10 -15% of obstructed groin hernias contain necrotic bowel.

Gul et al conducted a study on the factors affecting morbidity and mortality in patients who underwent emergency operation for incarcerated abdominal wall hernia which are consistent with the observations of the present study.[20]

Dunne et al, assessed the risk factors for infections and resource utilization in inguinal hernia patients and reported that postoperative morbidity is high in elderly patients.[21] The study by Azari et al compared patients above and below 80 years old diagnosed with strangulated hernia, and reported that elderly age played a role in morbidity and mortality, which correlated with the findings of the present study.[22]

The results of this study show that it is safe to correct an obstructed hernia with mesh. Atila et al and Legnani et al found the same low incidence of wound infections in acute hernia repair with the use of prosthetic mesh in their cohort studies on acute incarcerated hernias.[23,24] This also corresponds to other studies involving the use of prosthetic mesh in contaminated areas.[25] Wound infection cannot be considered a contraindication for the use of mesh and can be effectively treated using antibiotics and local wound dressings.

CONCLUSION

Obstruction occurs in indirect inguinal hernia more commonly when compared with direct hernia. Small bowel is the most common content of the sac, followed by omentum. Reduction of hernia with mesh repair of posterior wall of inguinal canal and deep inguinal ring is associated with minimal complications compared to tissue-based repair.

Wound infection was reported as the most common complication and the incidence was less in mesh repair procedure than tissue repair procedure and can be avoided with proper use of antibiotics.

The ultimate criterion of success of hernia surgery is measured in the permanence of repair. In this series there was no recurrence of hernia after 1 year of follow-up.

Mortality and morbidity are related to the mean age of presentation, associated co-morbid conditions, tissue-based repair, symptoms at presentation, bowel resection and anastomosis and severity of post-operative complications.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Nicholson S. Inguinal hernia repair. Br J Surg. 1999;86(5):577–8.
2. Mokete M, Earnshaw JJ. Evolution of inguinal hernia surgery Practice. Postgrad Med J. 2001;77:188-90.
3. Gray SW, Skandalakis JE. Embryology for Surgeons. Philadelphia: W.B. Saunders; 1972: 417–422.
4. Oxford Textbook of Surgery, 2nd Edn. Vol. II. 1867–1876.
5. Kingsnorth AN, Leblanc KA. Management of Abdominal Hernias; 3rd edn. 1998.
6. Gilbert Al. An anatomic and Functional classification for the diagnosis and treatment of inguinal hernia. Amer J Surg. 1989;157:331–3.
7. Williams N. Bailey and Love's Short practice of surgery 24th Edn; 2004: 1272–1282.
8. Maclean CD. The repair of inguinal hernias (Editorial) Ann Surg. 1995;221:1.
9. Hari PS, Srinivas T. Clinical study on complicated presentations of groin hernias. Int J Res Med Sci. 2017;5:3303-8.
10. Hernández-Irizarry R, Zendejas B, Ramirez T, et al. Trends in emergent inguinal hernia surgery in Olmsted County, MN: a population-based study. Hernia. 2012;16(4):397-403.

11. Pollock R, Nyhus LM. Complications of groin hernia repair. Surg Clin North Am. 1983;63:1363-1.
12. Andrew NJ. Presentation and outcome of strangulated external hernias in a District General Hospital. Br Jr Surg. 1981;68:329-2.
13. Rutkow IM. Demographic and socioeconomic aspects of hernia repair in the United States in 2003. Surg Clin N Am. 2003;83:1045–51.
14. Shakya VC, Agrawal CS, Adhikary S. A prospective study on clinical outcome of complicated external hernias. Health Renaissance. 2012;10(1):20-6.
15. Kulah B, Kulacoglu IH, Oruc MT, Duzgun AP, Moran M, Ozmen MM, et al. Presentation and outcome of incarcerated external hernias in adults. Am J Surg. 2001;181(2):101-4.
16. Alvarez JA, Baldonedo RF, Bear IG, Soli's JA, Alvarez P, Jorge JI. Incarcerated groin hernias in adults: presentation and outcome. Hernia. 2004;8(2):121–6.
17. Eze JC. MD Enugu, Nigeria. Obstructed Inguinal Hernia: Role of Technical Aid Program. J National Med Assoc. 2004;96:6.
18. Goyal S, Shrivastava M, Verma RK, Goyal S. Uncommon Contents of Inguinal Hernial Sac: A Surgical Dilemma. The Indian J Surg. 2015;77(2):305-9.
19. Bekoe S. Prospective analysis of management of incarcerated and strangulated inguinal hernia. Am J Surg. 1973;126:665-8.
20. Gul M, Aliosmanoglu I, Kapan M, Onder A, Taskesen F, Arikanoglu Z, et al. Factors Affecting Morbidity and Mortality in Patients Who Underwent Emergency Operation for Incarcerated Abdominal Wall Hernia. Int Surg. 2012;97(4):305-9.
21. Dunne JR, Malone DL, Tracy JK, Napolitano LM. Abdominal wall hernias: risk factors for infection and resource utilization. J Surg Res. 2003;111(1):78–84.
22. Azari Y, Perry Z, Kirstein B. Strangulated groin hernia in octogenarians. Hernia. 2015;19:443–7
23. Atila K, Guler S, Inal A, Sokmen S, Karademir S, Bora S. Prosthetic repair of acutely incarcerated groin hernias: a prospective clinical observation cohort study. Langenbecks Arch Suer. 2010;395:563-8.
24. Derici H, Unalp HR, Nazli O, Kamer E, Coskun M, Tansug Tet al. Prosthetic repair of incarcerated inguinal hernias: is it a reliable method? Langenbecks Arch Surg. 2010;395(5):575–9.
25. Sawayama H, Kanemitsu K, Okuma T, Inoue K, Yamamoto K, Baba H. Safety of polypropylene mesh for incarcerated groin and obturator hernias: a retrospective study of 110 patients. Hernia. 2013;13:1058–65.

Cite this article as: Padmasree G. A clinical study on obstructed inguinal hernia: a descriptive study on 53 cases. Int Surg J 2019;6:1965-71.