Original Research Article

A prospective analytical study on epidemiology and management of incisional hernia

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Abstract

Introduction: A hernia is the protrusion of viscous or a part of viscous through a normal or abnormal opening in the wall of its containing cavity. A ventral hernia is any hernia protruding through the abdominal wall, while Incisional hernia (IH) is a hernia protruding through an operational scar. According to the various studies abdominal surgeries have 11% to 19% chance of developing IH. **Materials and Methods:** The study is a prospective study and study group was patients admitted and operated in Bidar Institute of Medical Science, Bidar Karnataka from April 2019 to December 2020. Total 75 cases of various types of hernias operated. Out of 30 cases of incisional hernias were included in this group for study. In this series patients admitted in surgical wards under all surgical units were examined to assess the abdominal wall defects, etiological and predisposing factors. A detailed case history and thorough clinical examination was done to determine the type and cause of hernia and necessary investigations were done according to proforma. After detailed physical examination of patients, clinical diagnosis was established including the associated etiological and predisposing factors. **Results:** During the period of our study, a total of 75 patients have been operated for various types of hernia, out of these 30 cases were incisional hernia. Inguinal hernia was most common type accounting for 42.66%, next common hernia was incisional hernia (40%) remaining rare type of hernias constituting 17.34% of total cases studied. Maximum number of cases in middle age group (30-60 yrs.) constituting 80%. Incisional hernia was found to be more common in females with male female ratio of 1:2.3. **Conclusion:** Mesh repair results in less recurrence than anatomical repair for incisional hernia. The incidence of incisional hernia is more common in women than men due to abdominal wall weakness secondary to multiple pregnancies, increased number of caesarean sections and gynaecological surgeries. Sterile aseptic technique and appropriate use of pre-operative antibiotics is necessary to reduce the occurrence of incisional hernia.

Key Words: ventral hernia, Incisional hernia, multiple pregnancies, gynaecological surgeries.

Introduction

A hernia is the protrusion of viscous or a part of viscous through a normal or abnormal opening in the wall of its containing cavity[1]. A ventral hernia is any hernia protruding through the abdominal wall, while Incisional hernia (IH) is a hernia protruding through an operational scar[2]. According to the various studies abdominal surgeries have 11% to 19% chance of developing IH[3,4]. The incidence of IH is dependent on the type of surgery, disease pathology, duration, surgical technique, age and patients characteristics, co-morbidities and post-op complications. Morbidly obese patients got higher chance of incidence of IH. The use of different imaging modalities like ultrasonography (USG), computerized tomography (CT) and magnetic resonance imaging (MRI) yields higher incidence of IH.Incision type and length also play a major role in the incidence. Various studies were conducted to compare the incidence of IH in median incision, paramedian incision and transverse incision. A number of meta-analysis and studies shows mass closure of abdomen with continuous non-absorbable or slowly absorbable suture material is the best technique for prevention of IH. Although there is no strong evidence from randomized controlled trials, various studies emphasize the need for suture length: wound length ratio of at least 4:1 when one bite must encompass 1 cm of tissue at 1 cm intervals[5].

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Many risk factors are associated with the occurrence of IH, both patients related and surgeon related. Major patient related risk factors are obesity, chronic lung diseases, type 2 DM, male gender, age, smoking, malnutrition, steroids, chemotherapy, anaemia, collagen vascular disorders, wound infections etc, while surgeon related are wound closure methods, suture material selection etc[6].IH has been clinically defined as "a bulge, visible and palpable when the patient is standing, and often requiring support or repair". This bulge, which is located over or near the scar of a ventral abdominal wall incision and enlarges during standing, is the usual clinical presentation. With time, IH becomes larger. Symptoms will usually be aggravated by coughing or straining. During the pre-antibiotic era, the recurrence rate was quite high and cure rate was low. After the advent of good and safe anaesthesia, antibiotics, closed suction drainage, use of prosthetic mesh, transfusion facilities, better understanding of fluid therapy and proper care during preoperative and postoperative period, the cure rate is almost cent percent. Studies show that pain and increase in the size are the major indications for surgery. And in some cases, obstruction, strangulation and trophic ulcers are also seen.

Management of IH comes under two headings preventive and operative. Preventive aspects include proper choice of incision, avoidance of tension on suture line, preservation of nerves and proper closure of the abdominal wounds. Operative management consists of anatomical reconstruction layer by layer, reconstruction of various layers of the abdominal walls, darning technique, usage of implants, and repair with synthetic non-absorbable mesh. IH repairs can be done using either open or laparoscopic techniques; laparoscopic gaining more popularity. The open technique may consist of a simple hernioplasty, component separation technique or mesh repair. The

component separation technique is based on enlargement of the abdominal wall surface by separation and advancement of the muscular layers. The mesh can be placed using on-lay, sub-lay or inlay techniques[7].Laparoscopic hernia repair mainly practiced today is intra-peritoneal inlay technique with placement of mesh that is secured with a tagging device or trans-abdominal sutures. Totally extra-peritoneal (TEP) repair and extended view TEP are also gaining popularity.Present study aims to assess and analyse various factors leading to development of incisional hernias, post-operative complications, different modalities of surgical repair and their outcomes.

Materials and methods

The study is a prospective study and study group was patients admitted and operated in Bidar Institute of Medical Science, Bidar Karnataka from April 2019 to December 2020. Total 75 cases of various types of hernias operated. Out of 30 cases of incisional hernias were included in this group for study.

Inclusion Criteria

Patients of age 12 years and above of both sexes who presented with incisional hernia post abdominal surgery were included in this study.

Exclusion Criteria

Age below 12 years and those presented with other hernias like inguinal/ ventral hernias were excluded.

In this series patients admitted in surgical wards under all surgical units were examined to assess the abdominal wall defects, etiological and predisposing factors. A detailed case history and thorough clinical examination was done to determine the type and cause of hernia and necessary investigations were done according to proforma. After detailed physical examination of patients, clinical diagnosis was established including the associated etiological and predisposing factors. A final decision was made regarding method of repair to be done individually for every case depending on the need of surgery. Thirty cases underwent surgery and patients were preoperatively prepared to be medically fit to withstand the surgery. All cases were evaluated to look for immediate and late postoperative complications. Data was analysed to find out predisposing factors, advantage of various operative techniques, complications developed, need of good post-operative care and outcome of the various operations done.

Statistical Analysis

The statistical analysis was done by using SPSS software version 10.0 was used. Data was analyzed descriptively and tabulated using mean and standard deviation.

Results

During the period of our study, a total of 75 patients have been operated for various types of hernia, out of these 30 cases were incisional hernia. Inguinal hernia was most common type accounting for 42.66%, next common hernia was incisional hernia (40%) remaining rare type of hernias constituting 17.34% of total cases studied.

Table 1: Incidence of Incisional Hernia

Type	No of classes	Percentage
Inguinal	32	42.66
Incisional	30	40
Femoral	3	4
Umbilical	4	5.33
Paraumbilical	5	6.66
Epigastric	1	1.33
Total	75	100

Maximum number of cases in middle age group (30-60 yrs.) constituting 80%. Incisional hernia was found to be more common in females with male female ratio of 1:2.3.

Table 2: Age distribution of Incisional Hernia

Age	No of classes	Percentage
12-20	1	3.33
21-30	1	3.33
31-40	6	20
41-50	10	33.33
51-60	8	26.66
61-70	3	10
71-80	1	3.33
Total	30	100

Table 3: Predisposing factors

Findings	No of classes	Percentage
Obesity	9	30
Anaemia	10	33.3
Diabetes Mellitus	3	10
hypertension	3	10
Bronchial Asthma	3	10
Chronic Bronchitis	2	6.66
Total	30	100

Majority of patients who underwent emergency surgery developed incisional hernia, Gynaecological surgeries were the most common cause for incisional hernias accounting for 70% of the cases.

Table 4: Nature of Operation

Nature	No of classes	Percentage
Emergency	17	56.66
Elective	13	43.33

Table 5: Indication for surgery

Cause	No of cases	Percentage
Abdominal hysterectomy	6	20
Abdominal sterilization	5	16.66

Caesarean section (LSCS)	6	20
Acute intestinal obstruction	1	3.33
Appendicular perforation	2	6.66
Duodenal perforation	3	10
Ileal perforation	1	3.33
Epigastric hernia	2	6.66
Ovarian cystectomy	2	6.66
Open cholecystectomy	2	6.66
Total	30	100

Infraumbilical midline incision (43.33%) was found to be more common compared to other incisions Wound infection (18%) and wound dehiscence (32%) were found to be more common postoperative complications after previous surgeries. Only 6 cases were repaired by anatomical repair. Most of the cases have been repaired by onlay mesh repair. Out of 30 cases studied, 15 had complications, wound seroma is most common complication accounting for 20% and is more common in Prolene mesh repair than anatomical repair.

Table 6: Incision Used in Previous Surgeries

Type	No of cases	Percentage
Infraumbilical	13	43.33
Supraumbilical	7	23.33
Mid Midline	2	6.66
Right paramedian	2	6.66
Pfannenstiel	6	20
Total	30	100

Discussion

The incidence of Incisional hernia in this study was 40% which was second only to inguinal hernia (42.66%). According to a study done by Mutwali et al the incidence was 11-20% which was slightly lesser when compared to the present study. Incisional hernia is a common complication due to patient or wound related factors in spite of the good technique adopted by the surgeons[8].In the present study the most common group involved was 41-50 years (33.33%) with male to female ratio was 1:2.3. Ellis et al in their study reported that 48% of patients developing incisional hernia belonged to the age group of 31-40 years with male to female ratio 4.8:1. In the study by Agrawal et al, male to female ratio was 1:1.6. The incidence of female patients with incisional hernia in this study was 70% which was higher than the study done by Millbourn et al whose incidence was 64.6%[9].Khaira H.S et al reported seroma formation in 6 out of 35 patients and wound infection in 1 out of 35 patients. In a study done by Tulaskar et al 9 cases (14%) had surgical site infection, 4 cases (6.25%) had seroma formation and 2 cases (3.1%) had wound gaping. In this study 4 methods were used for the repair of incisional hernia among which polypropylene mesh repair was used in 63% of patients, laparoscopic hernia repair (17%), double breasting method (12%) and anatomical repair (8%). In the present study there were no recurrences until 18 months of follow up. Usher reported zero percent recurrence in 48 patients who were treated by polypropylene mesh repair. Jacobus W. A et al reported a 10 year cumulative rate of recurrence of 63% in anatomical repair and 32% in mesh repair. The recurrence rate may vary according to the method of repair, but majority of studies recommend mesh repair to decrease the recurrence rate. Jenkins reported in their study of 154 patients, established the superiority of mesh repair over anatomical repair with regard to recurrence of hernia[10].

Conclusion

Incisional hernia is more common in women than men due to abdominal wall weakness secondary to multiple pregnancies, increased number of caesarean sections and gynaecological surgeries. Infraumbilical midline incisions should be restricted to the surgeries where access to the lower abdomen and pelvis organs is a must. Sterile aseptic technique and appropriate use of pre-operative antibiotics is necessary to reduce the occurrence of incisional hernia. Suction drains must be used in both anatomical and mesh repairs to reduce the post-operative complications like seroma, wound infection and wound gapping, thereby reducing the recurrence of incisional hernia. Mesh repair has less rate of recurrence when compared to anatomical repair; hence, mesh repair should be preferred over anatomical repair. Laparoscopic hernia repair should be the first line of treatment for recurrent incisional hernias.

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