International Journal Dental and Medical Sciences Research
Volume 2, Issue 3, pp: 23-27 www.ijdmsrjournal.com ISSN: 2582-6018

Recurrent Inguinal Hernia – A Study of Risk Factors

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Date of Submission: 08-08-2020 Date of Acceptance: 24-08-2020

ABSTRACT: Aim: A recurrent inguinal hernia occurs due to a weakening in the groin muscle, which recurs even after surgical intervention. Inguinal hernias can occur in both men and women, and become more complex when they are recurring. Though with utmost care surgical repair of inguinal hernias are being done, recurrences in inguinal hernia is not so rare. There are multiple factors that do have a role in recurrences of inguinal hernia. In this study, we report the cases operated for recurrent inguinal hernia in our center and analyze the patient related risk factors for recurrent inguinal hernia.

Methods: Study of the case records of 90 patients operated between November 2013 and July 2019, who were operated for recurrent inguinal hernia at a tertiary care centre were reviewed retrospectively. The cause for recurrence such as Chronic cough (seen in chronic bronchitis/ bronchial asthma), micturation difficulty (seen in stricture urethra/ prostatic hypertrophy) chronic constipation and lifting heavy weight (Manual labourers), morbid obesity were enquired and recorded.

Results: All of our patients were males. The mean age was 54.97 years. The mean time to recurrence was 5.5 years. During the previous surgery polypropelene mesh had been used in 12 patients (13.33%), Tissue repair done in 78 cases (86.66%). The cause for recurrence in 43 cases (47.77%) could be detected whereas in 47 cases (52.22%) definite cause could not be detected. Age above 40years is also a remarkable factor in recurrence of inguinal hernia whereas use of surgical mesh in repair of hernia reduces the recurrence rate.

KEYWORDS: Inguinal hernia, Recurrence, Risk factors, Recurrent inguinal hernia.

I. INTRODUCTION

Hernia occurs mostly in the inguinal region. Hernia repair is the most common surgery done by a general surgeon. Complications of a hernia surgery includes recurrences, bleeding in surgical field, infections, seromas, chronic pain in groin region, pain-related sexual dysfunction, and ejaculatory disorders. In the literature, operation for recurrent hernias has been reported to have a higher risk for possible complications than primary hernia surgery. Although the definite causes of recurrence after surgery still remains unclear, controllable technical risk factors such as surgical methods, anesthesia techniques, mesh-fixation techniques, surgeon experience and hospital volume have been described as the main risk factors for recurrent inguinal hernia. Patient related factors such as chronic cough, micturation difficulties, chronic constipation, continuous weight lifting, obesity also contribute for the recurrence significantly. In addition, uncontrollable patient-related risk factors including sex, hernia anatomy, hernia type and postoperative recovery have been shown to affect the risk of recurrence following inguinal hernia surgery in varying degrees [1]. In the present study, we try to detect the cause of recurrence of inguinal hernia in the cases of recurrent inguinal hernia present in our center and discuss the risk factors for recurrent inguinal hernia. This study mainly focuses on the non-technical risk factors for recurrent inguinal hernia.

II. MATERIALS AND METHODS

Selection of Patients.

This study included a total of 90 patients who were operated due to recurrent inguinal hernia at a Medical college hospital, (tertiary care center) between November 2013 and July 2019. Medical records of all patients were retrospectively analyzed. Patients with primary inguinal hernia, patients younger than 14 years of age, and those with abdominal hernia (i.e., umbilical, epigastric, or incisional) outside the inguinal region, the patients treated with emergency surgery were excluded from the study. Data including demographic characteristics of the patients, time from previous surgery, localization and type of hernia, and the use of surgical meshes in previous surgery were recorded. In all the records, patients

International Journal Dental and Medical Sciences Research
Volume 2, Issue 3, pp: 23-27 www.ijdmsrjournal.com ISSN: 2582-6018

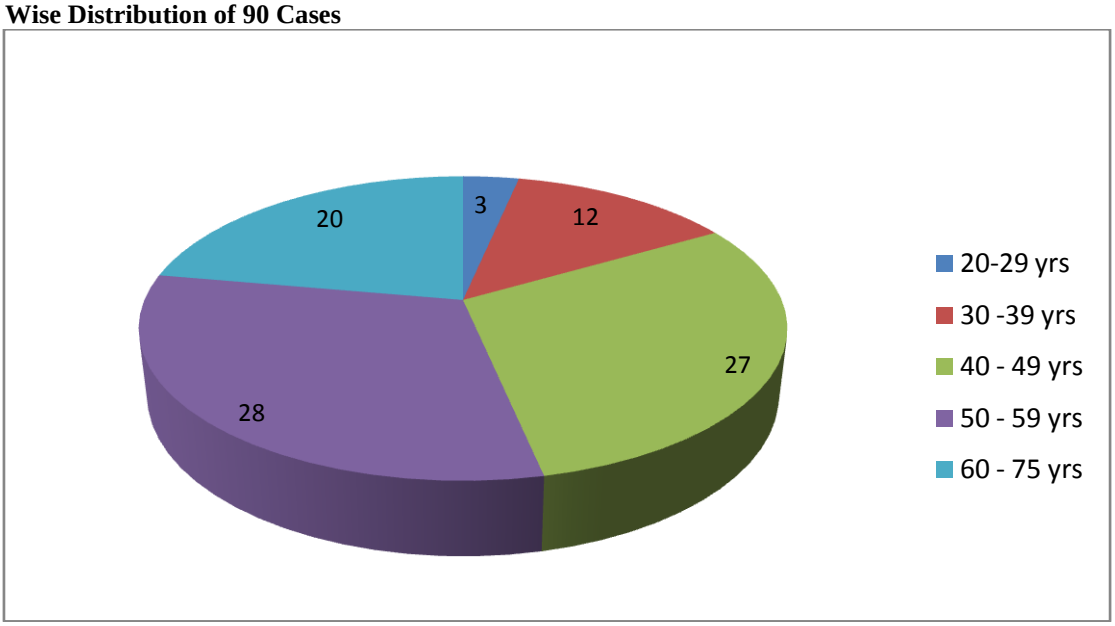
history regarding Chronic cough, micturation difficulties, chronic constipation, working condition which involves of more weight lifting were taken into account for this study.

III. RESULTS.

In this study we have analyzed the case sheets of 90 patients presented with recurrent inguinal hernia. The following is the data collected from the patients. 12 patients suffered from chronic cough (Bronchitis/bronchial asthma) 13.33%, 13 patients suffered from micturation difficulty such as increased frequency, hesitancy (enlarged prostste) 14.44%, 5 patients were obese (morbid obesity) 5.55%, 4 patients suffered from chronic constipation 4.44%, 5 patients had to lift heavy objects due to their profession (Manual labourers) 5.55%, 3 patients had both chronic cough and micturation difficulty 3.33%, and 1 patient had both micturation difficulty and chronic constipation 1.11%. thus 43 patients were detected to have Patient factors related to the recurrence of hernia forming 47.77%. Polypropelene mesh had been used in the primary surgery in 12 patients 13.33% and tissue repair was done in 78 cases 86.66%. While hernia was on left side in 23 cases 25.5%, it was in right in 64 cases 71.1% and bilateral in 3 cases 3.3%.

All the 90 patients in this study were males with a mean age of 54.97 (21 - 75) years. All patients previously had been operated by open technique. Most of the recurrences were in the fifth and sixth decades of life. All patients complained of swelling in the operation area, while 19 of the patients (21.1%) additionally reported pain. The mean time to recurrence was 5.5 years (4 months-15 years), Majority of recurrences were developed (55%) in first five years after initial operation". In 23 patients (25.5%), hernia was on the left side, while it was on the right side in 64 patients (71.1%). Three patients (3.3%) had bilateral hernia. Localization (right/left) had no statistically significant effect on recurrence (p=0.679). A surgical mesh was used in previous surgery in 12 patients (13.3%), while no mesh was used in 78 patients (86.6%). Statistically significant reduction in recurrence rate (p=0.003) was seen when surgical mesh is used in the primary surgery.

Age Wise Distribution of 90 Cases



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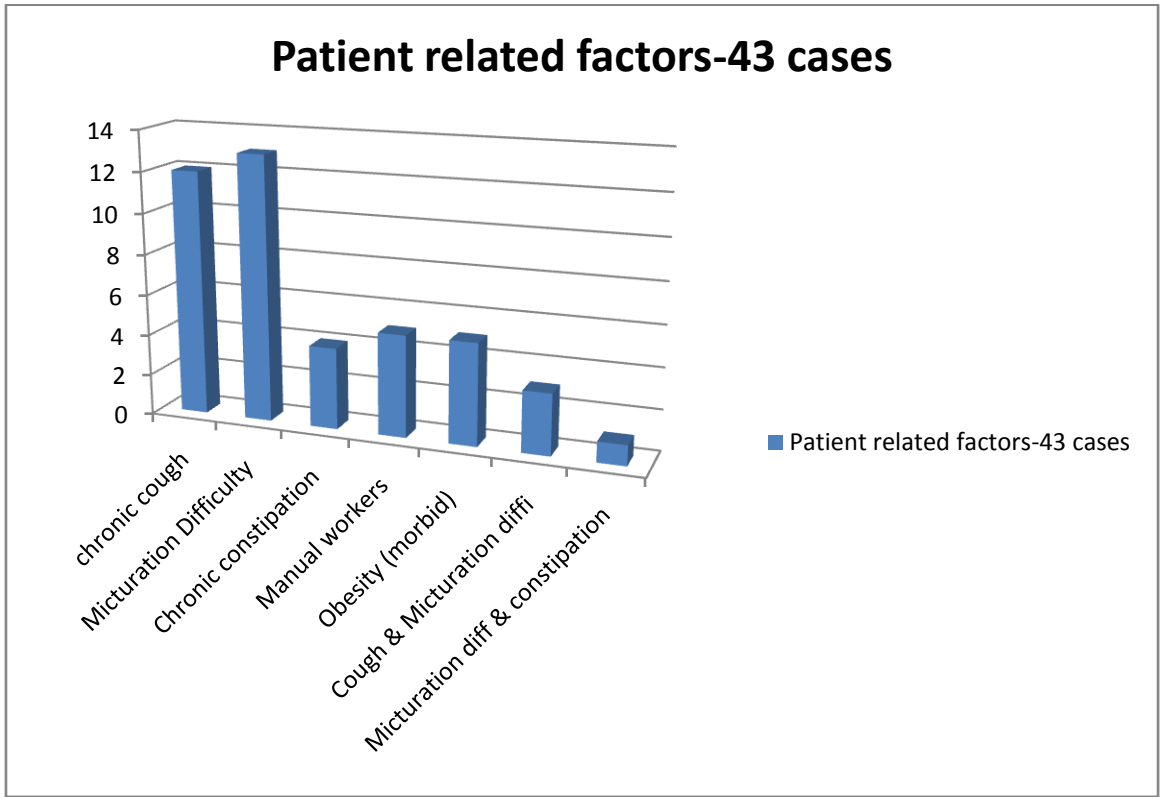

IV. DISCUSSION.

The high prevalence of early recurrence of hernia was predominantly due to technical failures, as opposed to late recurrences that were caused essentially by local tissue failure [2,3,4]. The recurrence rate of hernias was the highest within 1 year of surgery and the recurrence rate between 1 year and 2 years was the second highest. Moreover, we found that early recurrence was more likely in the mesh repair group compared to the tissue repair group. Early recurrence was noted if a technical problem occurred during mesh repair, while late recurrence was observed in patients who underwent tissue repair [5]

The recurrence rate of inguinal hernia following primary hernia repair ranges from 0.5% to 15% depending upon the hernia site, the type of repair, and the clinical circumstances [6,7,8,9,10]. Although the recurrence rate of inguinal hernia may be declining due to the more frequent use of mesh in primary hernia repairs [5], recurrence still occurs due to various factors and it clearly remains a major health problem.

Early recurrence (within 2 years) is generally related to technical factors [6]. The main technical factors commonly associated with recurrent inguinal hernia are related to either a tissue repair [9,11,12] or inadequate mesh size or inadequate mesh fixation. Tissue repair, which is less likely to produce a tension-free repair, is an important cause of failed hernia repair. No significant differences have been identified in the incidence of recurrent hernia following primary hernia repair using a mesh, regardless of operative approach such as open or laparoscopic hernia repair [7,9,10,13,14].

Late recurrences (after 2 years) are usually related to patient-related factors. Patient factors that increase the risk for recurrent inguinal hernia are generally those that disrupt or weaken the tissues, contribute to poor wound healing, or increase the risk for postoperative infection. There have been many developments in the surgical procedure for inguinal hernia; presently, the so-called 'tension-free repair' is the procedure of choice [15] owing to the low recurrence rate of hernias associated with it.

Although age is defined as an absolute risk factor for recurrent inguinal hernia, Ruhl and Everhart [16] reported increased cumulative incidence of recurrent inguinal hernia among men by 7.3% at age 24 to 39 years, 14.8% at age 40 to 59 years, and 22.8% at age 60 to 74 years. Consistent with these findings, we also found that recurrence rates were higher in the fifth and sixth decades, although it did not reach statistical significance. This increase can be explained by an

age-dependent decrease in tumor necrosis factor-induced proliferation and in production of interleukins by fibroblasts, both of which diminish immune response and wound healing-related aging [17]. In another study, Ashcroft et al. [18] showed an age-related increase in the matrix metalloproteinase 2 and 9 immuno staining in normal skin and acute cutaneous wounds, predisposing the patient to tissue breakdown conditions. Meyer et al. [19] also reported age dependent alterations in the hyaluronan in human skin.

V. CONCLUSION.

In conclusion, our study indicates inguinal hernias recur due to their multifactorial etiology such as patient related factors such as age, factors increasing intra abdominal pressure (Chronic cough, micturation difficulties, constipation etc.) several technical and non-technical patient-related risk factors. Also we infer, use of surgical mesh, which is common in hernia repair, can reduce the recurrence rate. However, further large-scale and comprehensive studies are required to confirm these findings.

Funding: No financial support for this research was received from any individual or firm/ institution.
Original article not sent for any other society or been published before.

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