Inguinal hernias in patients of 50 years and above. Pattern and outcome

Avaliação do tratamento da hérnia inguinal em pacientes com mais de 50 anos de idade

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A B S T R A C T

Objective: to evaluate a one year experience with inguinal hernia repair, in patients of > 50years, with respect to the type of inguinal hernia, type of surgery, postoperative complications and recurrence. **Methods:** a prospective descriptive study of patients (n=57) > 50 years operated for inguinal hernia during a one year period. Tension-free meshplasty and herniorrhaphy, using 3"x6" polypropylene mesh and 2-0 polypropylene suture, were performed in elective and emergency surgery respectively. Follow-up visits were scheduled at six weeks, three and six months postoperatively. **Results:** the most representative age group was 61-70 years, and all patients were male. 52 (91.22%) patients had unilateral inguinal hernias, while five (8.77%) had bilateral hernias. In 50 (87.71%) patients, the hernia was uncomplicated, while seven (12.28%) patients presented with some complication such as obstruction or strangulation. Elective surgery was performed in 50 (87.71%) patients while seven (12.28%) patients were operated in emergency. Postoperatively, 50 (87.7%) patients had uneventful recovery, while seven (12.28%) patients developed some complications which were treated conservatively. Mean hospital stay was six days. One recurrence was observed and there was no peri/postoperative death. **Conclusion:** tension-free meshplasty and herniorrhaphy are safe, simple and applicable even in elderly patients after adequate pre-operative assessment and optimization. Although associated with longer hospital stay, the mortality rate is nil and complication as well as recurrence rate is low. Hence, timely repair is necessary in elderly patients even in those with comorbid conditions.

Key words: Hernia. Hernia, inguinal. Herniorrhaphy. Surgical mesh. Postoperative complications.

INTRODUCTION

Hernia is derived from the Latin word for rupture[1]. A hernia is defined as an abnormal protrusion of an organ or tissue through a defect in its surrounding walls. Although a hernia can occur at various sites of the body, these defects most commonly involve the abdominal wall, particularly the inguinal region[1].

Hernia surgery is one of the earliest forms of surgery and various techniques of hernia repair have been described. The ideal treatment of inguinal hernia should be well defined and should be the least traumatic as regards to both the requested type of anesthesia and the operative technique, least expensive, least per-and postoperative morbidity, the chosen technique should also be the easiest to learn and perform and the positive results should be the most reproducible[2].

Tension free techniques for hernia repair has enjoyed widespread use for many years, with excellent results, few recurrences and little postoperative morbidity[3]. Earlier, nylon (a polyamide), was used as a mesh in inguinal hernia surgery, but the limitation faced was that polyamide degenerates over time. This led to the use of other synthetic materials, such as, polyester, polypropylene, expanded polytetrafluoroethylene (ePTFE) etc. The use of polypropylene mesh in hernia surgery has become increasingly popular. The use of synthetic mesh for achieving a tension free repair has resulted in a significant reduction in postoperative recurrences[4]. Polypropylene meshes have a mild reactivity upon implantation, in-growth, tensile strength which is retained for indefinite periods of time and a low susceptibility to mesh infection[5], but, they can induce adhesion of viscera when placed intraperitoneally[6]. Polyesters also have flexibility, high tensile

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strength and high resistance to stretching, but can cause fistula formation, hernia recurrence, postoperative infections and degradation in long-term implantation[7,8]. Expanded polytetrafluoroethylene (ePTFE), was introduced to hernia surgery by Sher *et al.*[9]; ePTFE has lower rates of adhesion formation than polypropylene[10], but, infection of an ePTFE mesh may require removal of the mesh.

Risk factors that are useful in predicting complications in an adult patient with a groin hernia include old age, short duration, femoral hernia, and coexisting medical illness. Reluctance for surgery due to economical reasons coupled with a general fear for surgery is the main reason for an increasing number of elderly surgical patients in developing countries[11].

Most of the elderly patients requiring surgery also have associated comorbidities. Reluctance for operation leads to complications at some stage and it has been pointed out in many studies that the mortality and morbidity increases many fold if such hernias are operated in the emergency setting in elderly patients[11,12].

The present study evaluates the management of inguinal hernias in patients of 50 years and above, for to aid to explain this problem in this group of patients, with respect to the type of inguinal hernia, type of surgery, postoperative complications and recurrence.

METHODS

After approval by the Hospital Ethics Committee and written informed consent, 57 patients (>50 yrs) of either sex, diagnosed with inguinal hernia, were included in this prospective descriptive study.

Patients were admitted through casualty or out-patient department, in a one year study period. Patients who are <50 years or who refused surgery were excluded from the study.

Comorbidities were taken care of in elective as well as in emergency situations. The patients were operated after thorough clinical and laboratory evaluation. Patients who presented with complicated hernias were operated in an emergency setting after pre-requisite investigations and resuscitation.

The anesthesia employed was determined by anesthetist after assessment of the patients. All patients underwent inguinal hernia repair tension-free meshplasty or hernioplasty was performed for uncomplicated inguinal hernias and herniorrhaphy was performed for complicated inguinal hernias. In tension-free meshplasty, a 3"x6" polypropylene mesh was used over the posterior abdominal wall, and in herniorrhaphy, a 2-0 polypropylene suture was used to approximate the conjoin tendon and the inguinal ligament in order to strengthen the weak posterior wall. Follow-up visits were scheduled for six weeks, three months and six months postoperatively. Manual workers were advised to start light work after six weeks. The variables studied included patient demographics (gender and age), type of inguinal hernia (direct or indirect, complicated or uncomplicated), associated co morbidities, type of surgery, type of anesthesia given, postoperative complications and recurrence.

RESULTS

Inguinal hernia repair was performed in 57 patients and all the patients were male. Patient demographics and clinical characteristics are given in table 1. Tension free meshplasty was performed in 47 patients with uncomplicated inguinal hernia and herniorrhaphy was performed in the remaining ten patients (out of the ten patients, seven were complicated hernias and three patients were too poor to afford a mesh, hence herniorraphy had to be done).

All patients were above 50 years of age, and the most representative age group was from 61-70 years, with 32 patients. The oldest patient was 82 years old. Direct hernia was seen in 30 patients (52.63%) and indirect hernia was seen in 27 (47.36%) patients. In 34 patients (59.64%) the hernia was on the right side, in 18 patients (31.57%) it was on the left side and in five patients (8.77%), it was bilateral.

Amongst 57 patients of inguinal hernia, 50 were uncomplicated (45 unilateral and five bilateral) and seven patients presented as complicated inguinal hernia; and of the seven complicated cases, obstruction was present in three patients, strangulation were seen in three patients and Richter's hernia in one patient.

In this study it was observed that the incidence of inguinal hernia is highest amongst the group engaged in hard and strenuous manual work where most of them were cultivators. Pain was the most common presenting feature in this study (53 patients), and many of them have associated comorbidities (Table 2).

Elective surgery patients associated with comorbidities, were evaluated by the anesthetist in the pre-anesthetic clinic and anesthetic clearance was obtained and patients were optimized before the surgery was perform, whereas, emergency cases were optimized and hemodynamically settled before taking up for surgery.

Table 1 - Patient demographics and clinical characteristics.

Characteristics		Variable
Age		> 50 years
Number of patients		57
Gender	• Male	57
	• Female	0
Emergent repairs		7
Elective repairs		50
Recurrent hernias		1

Table 2 - Associated co-morbidities.

Comorbidities	Number of patients	Percentage
Prostatic enlargement	20	35.08%
Pulmonary diseases	17.54%	
· Pulmonary Koch's	1	
· Chronic bronchitis	6	
· Bronchial asthma	3	
Diabetes mellitus	9	15.78%
Cardiac diseases	35.08%	
· Hypertension	14	
· Atrial fibrillation	3	
· Irregular heart beat	1	
· Left ventricular hypertrophy	2	

Tension free meshplasty or herniorrhaphy was then performed accordingly in all patients (Table 3). Ileal resection and end to end anastomosis was also carried out in three patients with strangulation. Table 4 shows the type of anesthesia given by the anesthetist for all the patients operated.

Postoperatively 50 (87.7%) patients had uneventful recovery with no complications. In patients undergoing tension-free meshplasty, short term morbidity is represented by one postoperative urinary retention (1.75%), one surgical site infection (superficial wound infection) (1.75%) and two scrotal edema (3.5%). Two patients with previous pulmonary disease, develop pulmonary complication (respiratory tract infection) (3.5%).

In the herniorrhaphy group, there is only one surgical site infection (superficial wound infection) (1.75%), which later on present as recurrence. There was no perioperative death and mortality rate was nil.

Most of the patients were discharged on the sixth day. Hospital stay ranged from 4-28 days, with a mean hospital stay of 12.5 days. Follow-up visits were scheduled for six weeks, three months and six months postoperatively. One recurrence was observed after nine months of operation. Initially on admission, this patient had prostatic enlargement and he presented to the emergency department with strangulation. The patient was taken up for surgery where herniorraphy, ileal resection and end to end anastomosis were done under general anesthesia.

Table 3 - Type of surgery performed.

Type of Inguinal hernia	Number of patients	Surgery performed
Uncomplicated unilateral inguinal hernia	45	Tension free meshplasty (42 patients) using 3"x6" polypropylene meshHerniorraphy (3 patients) using 2-0 polypropylene suture
Uncomplicated bilateral inguinal hernia	5	Bilateral tension free meshplastyusing 3"x6" polypropylene mesh
Complicated inguinal hernia*	7	Herniorraphy using 2-0 polypropylene suture

** Ileal resection and end to end anastomosis was also carried out in 3 patients with strangulation.*

Table 4 - Type of anesthesia given.

Type of Inguinal hernia	Type of Anesthesia given	Number of patients	Percentage
Uncomplicated inguinal hernia	Spinal anesthesia	39	64.91%
	Local anesthesia	5	8.77%
	Epidural anesthesia	3	5.26%
	Local anesthesia with sedation	2	3.5%
	Sedation	1	1.75%
	General anesthesia	0	0%
Complicated inguinal hernia	General anesthesia	7	12.28%

In the postoperative period, the patient developed wound infection which was managed conservatively and nine months later, he presented with recurrence. The long term follow-up of the rest of the patients did not show any persistent pain, groin and testicular hypoesthesia and no other recurrence has been found, neither sinus nor fistula formation.

DISCUSSION

Elective repair of inguinal hernias is a low risk procedure which can be safely performed under general/ regional/local anesthesia with few complications and low mortality[13], and should be performed soon after diagnosis is made and following adequate preparation even in the extreme elderly[14]. The incidence of inguinal herniation is higher in the elderly aged >65 years[15] and they also have concomitant medical problems which increase the risk of surgery, but even though morbidity in elderly is reported to be three times higher than in younger patients, age or comorbidity should not be a barrier to inguinal hernia repair[14].

The choice of the time in which to perform the operation is also important due to complications which may arise because of the necessity of urgent operations, also taking into account the possible health deterioration of elderly patients with comorbid conditions[16]. Risks evaluation must include the general condition of the patient and associated comorbid conditions. In our study, most of our patients have associated comorbidity (Table 2). One study[16] on elderly patients with cardiovascular disease concluded that the type of open surgery (tension-free) used, has no relevance as to the results to be reached and has the same advantages which have been observed in elderly non cardiac risk patients, such as a faster functional recuperation as well as no significant percentage difference related to the early and late complications following the operation, but with longer hospital stay.

One of the most striking features of inguinal hernia is its sex distribution. The male to female ratio is 9:1[17]. In our study, results were somewhat similar, in which 100% of the operations were on men. This is in line with other studies where inguinal hernia is more in men as compared to women. In a study by Primatesta *et al.*[18], 90% of operations were on men, and Dabbas *et al.*[19], reported that inguinal hernia repairs were carried out in total almost 15 times more commonly in men than in women.

Inguinal hernias are also more common in the right sided (almost 55%)[19]. Our study also showed right predominance with 31.57% left sided, 59.64% right sided repairs and 8.77% bilateral. A study by Dabbas *et al.*[19] also shows a similar trend with 49% left and 51% right sided repairs.

In our study, it was observed that the incidence of inguinal hernia is highest amongst the group engaged in hard and strenuous manual work where most of them were cultivators. Literature suggested that although inguinal hernias appears to occur more frequently in heavy laborers, a history of sudden onset of pain after a specific lifting episode is unusual except in worker's compensation patients[20].

The lifetime risk of inguinal hernia repair is high – 27% for men and 3% for women[18]. The mortality increases after emergency repairs[18], hence elective repair should be considered as soon as diagnosis is made to prevent any adverse outcome. Mortality risks following elective hernia repair is low even in older age groups, but, it carries a substantial mortality risk if it is an emergency operation[21]. In a study by Nilsson *et al.*[21], the mortality risk increases seven fold in an emergency operation as compared to an elective repair and 20 fold if bowel resection is undertaken. In our study, there was no mortality both in elective and emergency repair.

Few hernia relapses have been reported after primary repair of inguinal hernias. About 20% of groin hernia repairs are done due to recurrences[22]. In a study by Pavlidis *et al.*[14], the recurrence rate after tension free technique for inguinal hernia repair was as low as 1.5%. Gianetta *et al.*[23] reported a low recurrence rate of 1.8%, Liem *et al.*[24] reported 6% recurrence, Champault *et al.*[25] reported 2% recurrence and the MRC Laparoscopic Groin Hernia trial Group[26] and Amid *et al.*[3] reported as low as 0% recurrence rate after open repair of groin hernia surgeries. Our study is also consistent with these findings with a low recurrence rate of 1.75%.

In a study by Shaikh *et al.*[27], 90.7% of the patients had uneventful recovery and 5% developed surgical site infection, while Amid *et al.* reported less than 2% wound infection[3]. Gianetta *et al.*[23] reported 2.7% scrotal hematoma, 2% cord edema, 0.7% orchitis and 0.7% wound infection. In our study, 87.7% of patients have uneventful recovery. In both inguinal hernia repair techniques, 3.5% of the patients who already have some respiratory compromise pre-operatively, had post-operative respiratory tract infection. Surgical site infection and scrotal edema was seen in a total of 3.5% patients and postoperative urinary retention was seen in 1.75% patients.

Chronic groin pain has been reported in many studies (Erhan *et al.*[28] reported 4-6% of patients having chronic pain after Lichtenstein and preperitoneal hernia repair and Phoolbalan *et al.*[29] reported a 10% incidence of pain after inguinal herniorrhaphy). Several risk factors seems to play an important role in the development of chronic groin pain, such as surgeons experience, day care surgeries, intensity of immediate postoperative pain and degree of specialization[28,29]. One author quoted a 20% rate of nerve entrapment[30] but studies rarely mentioned whether surgeons identified the Ilioinguinal nerve or Iliohypogastric nerve during open dissection or not[31]. In our study, there was no incidence of chronic

groin pain, probably because the above risk factors were eliminated.

In our descriptive study, inguinal hernia repair - "Tension-free meshplasty" and "Herniorrhaphy", proved to be convenient, economical and safe for elderly patients, with little post-operative complications and no mortality.

Several types of anesthesia techniques have been described for inguinal hernia repair. Local anesthesia is preferred over the other types of anesthesia[16,32] even though hypotension and bradycardia have been reported[33]. Regional anesthesia techniques (spinal-epidural) have a high risk of urinary retention[16], and general anesthesia is associated with the need for full preoperative workup and longer postoperative recovery[14] and hospital stay. In a study by Pavlidis *et al.*[14] spinal was the type of anesthesia most frequently used in the elderly patients (38.5%), followed by general anesthesia (29.6%) and local anesthesia (16.3%). They attributed the low percentage of use of local anesthesia to the higher incidence of larger hernias in elderly patients as well as the fear for increased intraoperative pain with subsequent disastrous hypotension. In our study, spinal was the type of anesthesia most frequently used (64.91%), followed by general anesthesia (14.03%), local anesthesia (12.28 %), epidural anesthesia (5.26%) and sedation (3.5%). General anesthesia was mainly employed for complicated hernias. Local anesthesia was not the technique of choice in our study since most of the elderly patients were uncooperative and were afraid of the possibility of feeling pain while injecting.

Another approach of hernia repair is the laparoscopic approach. Liem *et al*[34] showed that laparoscopic repair have fewer recurrences and chronic inguinal pain as compared to the open technique, while others showed low recurrence with open tension free technique when compared to laparoscopic repair[35]. Even though laparoscopic repair has the advantages of less postoperative pain, shorter hospital stay and shorter convalescence as compared to the open technique[3,35], it is considered as a complimentary choice and not as an alternative to open surgery in elderly patients[2]. In elderly patients with comorbid conditions, the laparoscopic approach, which is only limitedly applied in the surgical treatment of hernia, has to be unquestionably eliminated, as it would imply the need of resorting to general anaesthesia. The disadvantages of the laparoscopic approach is the higher cost of laparoscopy and some authors underline that laparoscopy is more difficult to perform and to learn than open surgery[36] and in elderly patients, the need to resort to general anesthesia which is mandatory in laparoscopic surgery. The fact that elderly patients do not have a necessity for a rapid renewal of hard work or sport, therefore, another advantage of laparoscopy is lost[2].

In our study, we did the open conventional technique of hernia repair and did not consider laparoscopic approach because our patients' study age group >50 years and hence many of them would be expected to have associated comorbid conditions and moreover the laparoscopic unit in our Institute is not yet well developed at the time of conductance of this study. The results of our study showed that despite the presence of comorbidities and long hospital stay, there was no mortality, very few complications and low recurrence rate.

In conclusion, we can state that based on our results and observations, tension-free meshplasty and herniorrhaphy are safe, simple and applicable even in elderly patients after adequate pre-operative assessment and optimization. Although associated with longer hospital stay, the mortality rate is nil and complication as well as recurrence rate is low. Hence, timely repair is necessary in elderly patients even in those with comorbid conditions.

R E S U M O

Objetivo: *avaliar a experiência de um ano com a correção de hérnia inguinal, em pacientes > 50 anos de idade, em relação ao tipo de hérnia inguinal, tipo de operação, complicações pós-operatórias e recorrências.* ***Métodos:*** *estudo descritivo prospectivo de pacientes (n=57) > 50 anos de idade operados de hérnia inguinal durante um período de um ano. Herniorrafia com tela livre de tensão, utilizando a tela de polipropileno 3x6", e herniorrafia com suturas, utilizando fio de polipropileno 2-0, foram realizadas em operações eletivas e de emergência. Acompanhamento de visitas foram agendadas em seis semanas, três e seis meses no pós-operatório.* ***Resultados:*** *o grupo etário mais representativo foi 61-70 anos, e todos os pacientes eram do sexo masculino. Cinquenta e dois pacientes (91,22%) apresentavam hérnia inguinal unilateral, enquanto cinco (8,77%) tinham hérnias bilaterais. Em 50 pacientes (87,71%), as hérnias eram sem complicações, enquanto sete (12,28%) pacientes apresentavam complicações, tais como obstrução ou estrangulamento. Operações eletivas foram realizadas em 50 pacientes (87,71%), enquanto sete (12,28%) pacientes foram operados em situações de emergência. No período pós-operatório, 50 (87,7%) pacientes tiveram recuperação sem intercorrências, enquanto sete (12,28%) pacientes desenvolveram complicações que foram tratadas conservadoramente. A média de permanência hospitalar foi seis dias. Observou-se um caso de recorrência e não houve nenhuma morte per/pós-operatória.* ***Conclusão:*** *Herniorrafia com tela livre de tensão e herniorrafia com suturas são seguras, simples e aplicáveis, mesmo em pacientes mais idosos. As recorrências e as complicações, embora associadas a uma maior permanência hospitalar, são eventos de baixa incidência e a taxa de mortalidade foi zero.*

Descritores: *Hérnia. Hérnia Inguinal. Herniorrafia. Telas cirúrgicas. Complicações pós-operatórias.*

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