

# A comparative study of hernia with respect to visual analogue scale for post-operative pain

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## Abstract

**Introduction:** Inguinal hernia repair surgeries are among the commonest general surgical procedures performed worldwide and hence due effort has been taken over the years to reduce the morbidity associated with them. Postoperative pain following mesh hernioplasty is one such complication that has been a significant, albeit possibly underreported issue. Mild pain lasting a few days is common following mesh inguinal hernia repair. It is imperative to differentiate this pain from chronic groin pain or inguinodynia. Inguinodynia is described by the International Association for the Study of Pain (IASP) as “groin pain reported by the patient at or beyond 3-months following inguinal hernia repair”. Incidence varies among studies, ranging between 0% and 62.9% and has significant impact on quality of life. Chronic groin pain varies from a dull ache to sharp shooting pain along the distribution of inguinal nerves. There have been several theories put forward about the cause of inguinodynia. They have been broadly classified as neuropathic and non-neuropathic pain. **Aims and Objective:** To study hernia with respect to visual analogue scale for post-operative pain. **Methodology:** 100 patients will be thus selected based on the above inclusion and exclusion criteria Informed written consent will be obtained by each study subject Demographic data was collected by each patient using a proforma and documented **Result:** In our study, 46 patients had a direct hernia and 54 patients had an indirect hernia. 46% Patients were having left sided hernia and 31% were having right sided hernia 23% were having bilateral hernia. Type of Repair: 84 patients underwent a Lichtenstein’s mesh hernioplasty while 16 patients underwent a repair with no mesh. It was found that inguinodynia was more severe in bilateral hernia cases (p value=0.000041), indirect hernias (p value = 0.00001) and mesh repairs (p value =0.000504)

**Keywords:** visual analogue scale, Inguinodynia.

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## INTRODUCTION

Inguinal hernia repair surgeries are among the commonest general surgical procedures performed worldwide and hence due effort has been taken over the years to reduce the morbidity associated with them. Postoperative pain following mesh hernioplasty is one such complication that has been a significant, albeit possibly underreported issue. Mild pain lasting a few days is common following mesh inguinal hernia repair<sup>1</sup>. It is imperative to differentiate this pain from chronic groin pain or

inguinodynia. Inguinodynia is described by the International Association for the Study of Pain (IASP) as “groin pain reported by the patient at or beyond 3-months following inguinal hernia repair”<sup>2</sup>. Incidence varies among studies, ranging between 0% and 62.9%<sup>3,4,5</sup> and has significant impact on quality of life. Chronic groin pain varies from a dull ache to sharp shooting pain along the distribution of inguinal nerves. There have been several theories put forward about the cause of inguinodynia. They have been broadly classified as neuropathic and non-neuropathic pain. The three nerves potentially involved are the Ilioinguinal Nerve (IIN), Iliohypogastric Nerve (IHN) and genital branch of the Genitofemoral Nerve (GFN). These nerves can be damaged either by trauma during dissection or retraction of tissues, or nerve entrapment from post-operative fibrosis, mesh-related fibrosis or sutures used to fix the mesh<sup>1</sup>. Non-neuropathic causes are excessive scar formation resulting from prosthetic mesh reaction, periosteal reaction from sutures or staples inserted into the pubic tubercle or due to rolled-up bulky mesh leading to mechanical pressure. However, there is no single test to

pinpoint the etiology of inguinodynia. Studies have compared chronic groin pain with the mesh vs non-mesh repair, use of different types of meshes and various methods of mesh fixation like glue, sutures and staples. Likewise, there is controversy about the most optimal form of management of chronic groin pain. There is a need to study inguinodynia, its prevalence and manifestations, considering the sheer volume of hernioplasties performed in hospitals worldwide. A proper awareness of the magnitude of this postoperative complication will lead the way to finding preventive measures and solutions for the same.

**MATERIAL AND METHODS**

100 patients will be thus selected based on the above inclusion and exclusion criteria Informed written consent will be obtained by each study subject Demographic data was collected by each patient using a proforma and documented. All patients underwent Lichenstein’s tension free mesh inguinal hernioplasty by an experienced surgeon Patients were followed up for 3 months and pain was assessed in each patient at end of 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> month respectively Pain was assessed using Pain Assessment Visual Analogue Scale <sup>6</sup>The scale is filled by patients themselves. Using a ruler, the score is determined by measuring the distance (mm) on the 10-cm line between the “no pain” anchor and the patient’s mark, providing a range of scores from 0–10. A higher score indicates greater pain intensity.

**RESULT**

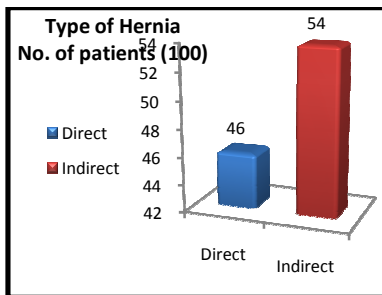


Figure 1: Distribution of patients as per the type of Hernia

Figure 1: Type of Hernia In our study, 46 patients had a direct hernia and 54 patients had an indirect hernia.

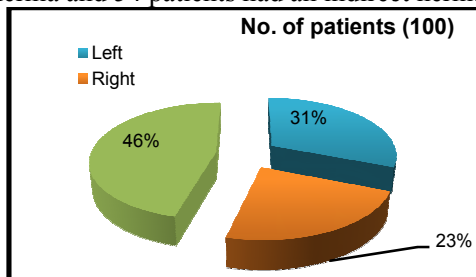


Figure 2: Distribution of Patients as per the Laterality of Hernia

Figure 2: Shows that 46% Patients were having left sided hernia and 31% were having right sided hernia 23% were having bilateral hernia

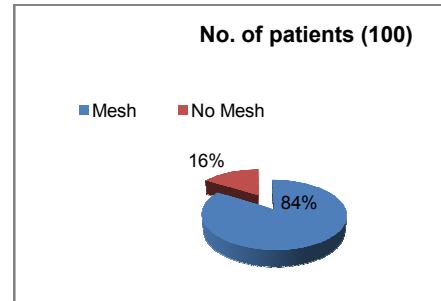


Figure 3: Distribution of patients as per Type of Repair

Figure 3: Shows the Type of Repair: 84 patients underwent a Lichenstein’s mesh hernioplasty while 16 patients underwent a repair with no mesh.

Table 1: Distribution of Types and treatment received of Hernia patients with Respect to VAS

		Mean VAS Score	T value	P value
Laterality	Unilateral	2.37	4.112444	0.000041
	Bilateral	3.89		
Type Of Hernia	Direct	2.45	4.476186	0.00001
	Indirect	3.81		
Type Of Repair	Mesh	2.94	3.39027	0.000504
	No Mesh	4.5		

Form Table 1. The mean VAS in Bilateral Hernia was 3.89 which is significantly more as compared to Unilateral hernia i.e. 2.37 (p<0.000041). Similarly the VAS in indirect hernia was 3.81 where as in direct was 2.45 the difference is highly significant (p<0.000041). The pain perceived by the patients also depends upon the type treatment received by them i.e. VAS was more in NO MESH repair group , 4.5 as compared to MESH repair group 2.94 this observed difference is highly significant. As illustrated in Table 1, p values were calculated. A p value of <0.05 was taken as significant. It was found that inguinodynia was more severe in bilateral hernia cases (p value=0.000041), indirect hernias (p value = 0.00001) and mesh repairs (p value =0.000504).

**DISCUSSION**

Similarly, more patients (54 compared to 46) had an indirect hernia as has been established by literature that indirect hernias are more common. Most of our patients (84%) underwent Lichenstein’ smesh hernioplasty which has been widely accepted as the best open mesh procedure for inguinal hernias. Only 16 patients had a repair with no mesh. The main cause for this was in affordability for prosthetic mesh<sup>7-10</sup>. Mesh was also not used for congenital hernias. We used Visual Analogue Scale for assessment of post operative pain. This is a well established method of pain evaluation. It provides the

advantage of being simple to self administer by patient themselves. It is a good subjective means of comparing change in pain levels in the same patient at different intervals over time. On measuring VAS scores, we found that the mean VAS scores were 3.6, 3.19, 3.24 and 3.19 at one day after surgery, one month, two months and 3 months respectively. We saw a rise in the pain levels after two months which might be attributable to chronic inflammation due to tissue injury, fibrosis or periosteal reaction<sup>1</sup> However, the accepted definition of inguinodynia is at three months postoperatively. According to our findings, among 100 patients, 52 % patients had moderate pain and 48% patients had mild pain respectively. This is in contrary to other studies that have found 10% of patients suffering from moderate to severe pain following inguinal hernia repairs<sup>11-13</sup>. One prospective series<sup>46</sup> of 419 Lichtenstein procedures noted that at 1 year follow up, 19% of patients had pain, 6% with moderate or severe degree. A Scottish study of 4062 patients identified at three months postop an incidence of 43% mild pain and 3% severe or very severe pain<sup>14</sup>. It is also interesting to see that all patients complained of some degree of pain, that is, not a single patient gave a score of 0. On the other hand, the incidence of severe pain is 0% as well. On comparing individual parameters, we found that there was an increased severity ( p value 0.000504 ) of inguinodynia in patients who had a mesh repair compared to patients who had a no mesh repair. This finding is in accordance to the Cochrane review by Scott and McCormack<sup>16</sup> as well as other meta-analyses<sup>15</sup>. Another conclusion we drew was that the pain was significantly higher (p value 0.00001) in indirect hernia repairs compared to direct hernia repairs. There is insufficient information regarding this in literature and more studies will be required. A possible cause could be increased amount of dissection during indirect hernia repairs leading to more manipulation of nerves or injury to them. We also found that inguinodynia was more in patients who underwent bilateral hernia repair compared to one sided hernia repairs (p value 0.000041). This might preclude that laparoscopic hernioplasty may be an option in bilateral hernias to reduce incidence of inguinodynia.

#### Limitations of Study

Due to limitation of time during this dissertation, our follow up time was three months. Further follow up is required to study natural history of inguinodynia and other parameters. We studied only open repairs which is the most common procedure performed in our hospital for inguinal hernias and not laparoscopic hernia repairs. We did not study preventive measures or management of inguinodynia.

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