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# The Effect of Mesh Type Used on Chronic Groin Pain Patients Underwent Lichtenstein Tension-Free Herniorrhaphy

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**Abstract** **Original Research Article**

***Introduction:*** Inguinal hernia repair is one of the most common elective operations performed in general surgery. With this study our aim is to compare the support strength that mesh provide the natural tissue and postoperative groin pain of the prolene and semi-absorbable composite mesh. ***Patients and Methods:*** 72 patients was included the study. Patients who gave written consent for participation were randomised. The patients were randomised into two groups, open Lichtenstein tension-free hernia repair using prolene mesh (Group I=44 patients) or using pga-pcl composite mesh (Group II=28). All patients underwent open Lichtenstein tension-free hernia repair using 2 different type of meshes. On postoperative long-term follow up the incidence of chronic groin pain and recurrence rates investigated. ***Results:*** Group II showed statistically significantly lower incidence of chronic groin pain at 3, 6 and 12 months. All patients showed significant improvement in QOL from pre-operative to post-operative at 3 months. However, Grup II showed statistically significant higher QOL scores when compared with Group I. There was one recurrence (3.5%) in Group II and 2 recurrence in Group I . There was no statistically significant difference between the two groups in the incidence of recurrence at 3, 6 and 12 months. ***Conclusion:*** In this study we demonstrate that tension-free herniorraphy with semi-absorbable mesh fixation is well tolerated and effective in reducing postoperative pain and improving postoperative quality of life. Therefore, semi-absorbable mesh usage represents an excellent alternative to standard mesh placement with both low recurrence and low chronic groin pain incidence in Lichtenstein hernioplasty.
**Keywords:** Herniorrhaphy, semi-absorbable mesh, chronic groin pain.


## INTRODUCTION

Inguinal hernia repair is one of the most common elective operations performed in general surgery[1]. Tension-free mesh based repairs are the most common method of inguinal hernia repair today, whether done by open method or laparoscopic because meshes have been shown to reduce the recurrence rates by up to 50%[1,2]. Efficacy of the mesh repair is based on strengthening of weakened native tissue by a strong mesh aponeurotic scar tissue (MAST) complex. Inflammatory processes beyond the optimum foreign body reaction may entrap the contiguous structures leading to complications such as chronic groin pain[1,3] With this study our aim is to compare the support strength that mesh provide the natural tissue and postoperative groin pain of the prolene and semi-absorbable composite mesh.

## PATIENTS AND METHODS

The study was conducted as a single centre prospective two arm single blinded randomised controlled trial in a single surgical unit at a tertiary-care referral hospital from 2016 to 2018. The study was approved by the Institute Ethics Committee.

72 patients was included the study. Patients who gave written consent for participation were randomised. The patients were randomised into two groups, open Lichtenstein tension-free hernia repair using prolene mesh (Polymesh Polypropylene (Polypropylene), Betatech Medical®, Istanbul, Turkey) (Group I=44 patients) or open Lichtenstein tension-free hernia repair using pga-pcl composite mesh (Polymesh composite (Polypropylene+PGA-PCL), Betatech Medical®, Istanbul, Turkey) Group II=28). The study was conducted as a single blinded study with the participant not knowing the type of mesh placed. The patients who are smaller than 18 years or older then 60 years, have significant co morbidities making patient unfit for general anaesthesia, have previous surgery to inguinoscrotal region and have obstructed/strangulated inguinal hernia excluded form study.

All patients underwent open Lichtenstein tension-free hernia repair using 2 different type of meshes. On postoperative long-term follow up the incidence of chronic groin pain and recurrence rates investigated. The demographic profile of the patients like age, sex, weight, height, body mass index and occupation were recorded on a pre-structured proforma. The detailed history and clinical features were recorded.

Follow-up was done at 1-week, 6 weeks, 3, 6 and 12 months in the follow-up clinic of our unit. All patients were assessed and asked about their complaints and then examined for recurrence and groin pain at every visit. Visual analogue scale (VAS) was used to determine the groin pain and physical examination used for recurrence incidence. All patients were asked for the resumption of walking freely in the house, resumption of driving vehicles, and resumption of their work in 6 and 12 months after surgery by using numaric scale from 0(no movement) to 10(excellent quality of life). Data were analysed using SPSS version 17 Large for windows and the techniques applied were Student's t-test/Mann-Whitney test wherever required to compare the continuous data in two groups. $P < 0.05$ was considered as significant.

## RESULTS

A total of 77 patients were included this study. There was statistically significant difference between the two groups in the incidence of chronic groin pain at 3, 6 and 12 months . The incidence of moderate to severe chronic groin pain at 12 months (which was taken as a VAS score ≥3) was 6.8% (3 patients) in Group I. In Group I the overall incidence of chronic groin pain at 3 months was 22.7%, which decreased to 15.9% at 6 months and to 6.8% at 12 months. In Group 2; The incidence of moderate to severe chronic groin pain at 12 months was 3.5% (1 patient) in Group II. In Group II the overall incidence of chronic groin pain at 3 months was 14.2%, which decreased to 7.1% at 6 months and to 3.5% at 12 months.

All patients showed significant improvement in QOL from pre-operative to post-operative at 3 months. However, Grup II showed statistically significant higher QOL scores when compared with Group I. There was one recurrence (3.5%) in Group II and 2 recurrence in Group I . There was no statistically significant difference between the two groups in the incidence of recurrence at 3, 6 and 12 months. The difference between groups in respect to quality of life was also compared. Return to walking, return to driving vehicles and return to work was significantly earlier in Group II (8.1 days to 21.4) ($p<0.05$)

## DISCUSSION

Inguinal hernia has a lifetime occurrence risk of 20 % in men, making its surgical repair one of the most performed surgical procedures worldwide. In the past few decades the quality of inguinal hernia surgery has improved drastically. Recurrence rates have fallen below 5 % with the introduction of mesh repair and patients are treated in a day setting.

Despite these achievements, inguinal hernia repair remains to be associated with one major complication: chronic postoperative inguinal pain. Up to 10–20 % of patients report chronic pain, defined as chronic inguinal pain more than 3 months after surgery. Inguinal hernia surgeons have developed various techniques to address this problem, but chronic postoperative inguinal pain remains a major issue to this day[3].

Chronic pain after inguinal hernioplasty can be defined as a persistent pain in operated groin region, lasting from 6 months after reoperation until at least one year, following EHS guidelines definition [4]. Of course for patients post-hernioplasty pain begins after the operation and they have fear to have a chronicization of pain, when its duration is more then one week. However, previous studies have shown the influence of many factors.

The incidence in world literature is estimated between [4]. This large range maybe reflects heterogeneity of surgical approaches and techniques, duration of follow-up and interpretation of data such as referred symptoms from each Author. Factors related to surgical techniques, psychological factors , patients' fear, and open or laparoscopic approach were previously analyzed to assess the influence on postoperative chronic pain[4,5]. Mechanisms (nerve entrapment, nerve trauma, amputation neurinoma, cicatrization damage) were advocated responsible for chronic pain after inguinal hernioplasty and were previously investigated in other papers [4, 6].

In such a trial, the three mesh-fixation methods found to be associated with similar postoperative pain. The results suggest that none of the techniques can be considered to have a pain-reduction advantage over the others [7].

In a study, when mesh weight and fixation methods compared in respect of postoperative groin pain; chances of chronic pain or higher VAS scores found to be increased by heavier weight mesh types compared to lightweight meshes. That heavyweight meshes were associated with higher postoperative VAS levells but mesh attachment type itself remained statistically insignificant. This would imply that in this study mesh weight carried more significance to chronic pain than attachment method[8]. Additionally as all types of emergency surgery, emergency surgeries for groin hernia carries high risk of complications like chronic postoperative pain[9-12].

On the other hand, The overview of the current and most recent literatüre suggests the existence of a positive correlation between surgeon's expertise and outcomes in inguinal hernia surgery although no significant conclusion could be reached for persistent groin pain[3].

In this study we demonstrate that tension-free herniorraphy with semi-absorbable mesh fixation is well tolerated and effective in reducing postoperative pain and improving postoperative quality of life. Therefore, semi-absorbable mesh usage represents an excellent alternative to standard mesh placement with both low recurrence and low chronic groin pain incidence in Lichtenstein hernioplasty.

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