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QUALITY OF LIFE ASSESMENT BEFORE AND AFTER LAPARO/ENDOSCOPIC AND OPEN MESH HERNIOPLASTY-A PROSPECTIVE STUDY

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Abstract:

Background: Chronic pain is the most common and serious complication following inguinal hernia repair. the post-operative pain may result due to fixation of mesh with staples . The recurrence rates for laparoscopic repairs have been: TAPP, 1.0–4.3% and TEP, 0–4%.

Methods: This is a prospective observational study of 60 patients suffering from groin hernia.The study was conducted in the post graduate department of surgery, GMC Srinagar for a period of one year from November 2022 to October 2023. Patients were subjected to general anesthesia or regional anesthesia. The study included symptoms of patients suffering from groin hernia before and after surgery.Pre and post-operative assessment of patients were done regarding pain, sexual activity, cosmetic appearance (groin bulge) and complications following surgery.Pre-operative assessment of pain was done by VAS(visual analogue scale).Post-operative assessment of pain and sensation of mesh in patients will be based on CCSS (Carolina comfort scale score).

Results: The age of the patients in our study ranged from 20 to 90 years with maximum patients in the range of 41-50 years with a mean age was 51.75 years, Out of our 60 patients 45 patients were having pre-operative pain ranging between 1-7 as per VAS score, with a mean VAS score of 2.75, Out of our 60 patients 18 patients underwent Lichtenstein procedure, 33 underwent TAPP and 9 underwent TEP, During TAPP procedure 2 patients had inferior epigastric vessel injury and during TEP 4 patients had peritoneal tear, At 24 hours follow up pain assessment using VAS score was a mean VAS score of 4.3095 for Laparoscopic methods (TAPP & TEP) and a mean VAS score of 5.0556 for Open method (Lichtenstein) with a significant statistical p value of p= 0.009, At 1 week follow up pain assessment using VAS score was a mean VAS score of 2.333 for Laparoscopic methods (TAPP & TEP) and a mean VAS score of 3.6667 for Open method (Lichtenstein) with a significant statistical p value of < .001, Among patients who underwent open procedure 9 had wound seroma, 7 had surgical site infection and 7 had developed hematomas within 30th postoperative day. Among patients who underwent TAPP 3 had developed port site seroma within 30th postoperative day, 2 had developed port site infection and 2 had developed hematomas. Among patients who underwent TEP 2 had seroma, 1 had port site infection within 30th postoperative day. There was no case of mesh related infection. We didn't have any case of recurrence post repair in the given follow up duration, At 3 weeks follow up Quality Of Life Using Carolina Comfort Scale Score was mean CCSS of 35.476 for Laparoscopic methods (TAPP & TEP) and mean CCSS of 58.611 for Open method (Lichtenstein) with a significant statistical p value of < .001. Out of 60 patients, 10 patients abstained from sexual activity due to personal/religious reasons. Out of

remaining 50 patients who were sexually active within 3 months prior to surgery, 8 patients were not satisfied because of pain and discomfort during such activity. Rest 42 patients were satisfied with their sexual activity. At 24 hour post-surgery mean VAS score for laparoscopic approach was 4.3095 and for open were 5.0556. Post 1 week mean VAS score for laparoscopic approach was 2.3333 and for open was 3.6667. At 3 weeks post-surgery mean VAS score for laparoscopic method was 0.9048 and for open method was 2.4444. At 3 months follow up no patient had pain from laparoscopic group while mean VAS score for open procedure was 0.7778. Post 3 months all 60 patients were pain free.

Conclusion: We recommend Visual analogue scale for assessment of pain and Carolina comfort scale for assessment of quality of life in inguinal hernia mesh repairs.

Keywords: VAS(visual analogue scale), CCSS (Carolina comfort scale score),IASP (the International Association for the Study of Pain).

Ethical clearance was obtained from institutional ethical committee prior to commencing the study.

Introduction

Groin hernias are more common in men—25% develop a hernia over the course of their lifetim.[1] In 1987 Ralph Ger first described laparoscopic hernia repair and since then there have been numerous modifications and advances in operative techniques. Recurrence following hernia repair has been reported to be over 15% before the emergence of tension free mesh repair.[2] Chronic pain is the most common and serious complication following inguinal hernia repair. The International Association for the Study of Pain (IASP) defines pain as an "unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage". This definition declares that pain, as well as having a physiological basis has a very real psychological or subjective component. Transition between acute and chronic pain is defined by most authors in terms of time. Neuropathic pain is caused by a primary lesion or dysfunction in the nervous system.[3] In a paper published by Steensel, et al. (1994) stated the post-operative pain may result due to fixation of mesh with staples . The idea was bolstered by Stoopa's success with non-fixation of mesh in open preperitoneal fixation and with intraabdominal pressure serving the mesh in place, sandwiched between tissue layers and mesh did not migrate. And there was no difference in recurrent rate between stapled and non-stapled fixations.The recurrence rates for laparoscopic repairs have been: TAPP, 1.0–4.3% and TEP, 0–4% .[4] Mesh-related infections following surgery are relatively rare but pose a greater risk of morbidity once infection is established. The rate of mesh infections after elective open repair is 1.5%. Laparoscopic hernia repair has low rates of infection, varying from 0.03% to 0.095%. Mesh infections are multifactorial relationship between bacteria, device and host factors.[5]This study was conducted to assess symptoms and quality of life in patients suffering from groin hernia and to evaluate pain, sexual activity, complications and quality of life following mesh hernioplasty.

MATERIAL AND METHODS

This is a prospective observational study of 60 patients suffering from groin hernia.The study was conducted in the post graduate department of surgery, GMC Srinagar for a period of one year from November 2022 to October 2023.Following inclusion and exclusion criteria was taken into consideration.Ethical clearance was obtained from institutional ethical committee prior to commencing the study.

Inclusion criteria

- Male patients suffering from groin hernia from 18 years and above will be included in the study.

Exclusion criteria

- Repair under local anaesthesia
- Below 18 years of age

- Female patients
- Obstructed/strangulated hernia
- Not fit for anesthesia
- Patients with :
  - Impaired cognitive function
  - Substance abuse
  - Markedly limited mobility
  - Decreased capacity to communicate.

Patients were subjected to general anesthesia or regional anesthesia. The study included symptoms of patients suffering from groin hernia before and after surgery.Pre and post-operative assessment of patients were done regarding pain, sexual activity, cosmetic appearance (groin bulge) and complications following surgery.Pre-operative assessment of pain was done by VAS(visual analogue scale).Post-operative assessment of pain and sensation of mesh in patients will be based on CCSS (Carolina comfort scale score).
The Carolinas comfort scale (ccss) is a validated, disease-specific, quality of life (qol) questionnaire developed for patients undergoing hernia repair.
Cessation of smoking was advised well in advance before the surgery. Patients were subjected to detailed clinical history, examination and findings was recorded as per the proforma .Variable factors of patients such as - age, sex, risk factors, mode of presentation and previous operation were analysed. Other risk factors - obesity, hypertension ,diabetes mellitus , COPD, malignancy were also taken into consideration.Routine investigations like blood, urine, chest X-ray and ECG were done. Special radiological investigations i.e. CT scan/MRI was done in some patients to assess the exact defect size, contents and adhesions. After explaining the procedure to the patient, informed and written consent was taken for the procedure and recording and these patients were subjected to pre-anesthetic check up and those found fit for general anesthesia was taken up for hernia repair .
Orogastric tube was inserted in all cases to decompress the stomach before pneumoperitoneum is created.Appropriate dose of prophylactic antibiotic- 3rd generation cephalosporin or piperacillin+tazobactum (in diabetics) was administered 30mins prior to skin incision.
Data Analysis: statistical analysis of the data was carried out with the help of SPSS software version SPSS 20.0. $p<0.05$ was considered significant.

RESULTS:

Table no. 1 DISTRIBUTION OF PATIENTS ACCORDING TO AGE GROUP (n=60)

AGE GROUP	NO OF PATIENTS	PERCENTAGE
20-30	6	10
31-40	8	13.33
41-50	16	26.66
51-60	13	21.66
61-70	13	21.66
71-80	2	3.33
81-90	2	3.33
Mean age ±SD	51.75±13.76	

The age of the patients in our study ranged from 20 to 90 years with maximum patients in the range of 41-50 years with a mean age was 51.75 years. 14 patients were below 40 years old and 46 were above 40 years old. Minimum age of patient was 21 years and eldest was 82 years.

Table no.2 DISTRIBUTION OF PATIENTS ACCORDING TO PRE OPERATIVE ASSESSMENT OF PAIN DURING PHYSICAL ACTIVITIES AS PER VAS SCORE. (n=60)

VAS SCORE	20-30 YEARS	31-40 YEARS	41-50 YEARS	51-60 YEARS	61-70 YEARS	71-80 YEARS	81-90 YEARS	%
NONE 0	2	2	5	4	2	0	0	25%
MILD 1-3	4	5	9	8	9	1	1	61.66 %
MODERATE 4-7	0	1	2	1	2	1	1	13.33 %
SEVERE 8-10	0	0	0	0	0	0	0	0%
Mean	2.75±1.09							

Out of our 60 patients 45 patients were having pre-operative pain ranging between 1-7 as per VAS score, with a mean VAS score of 2.75. All had pain during physical activity. None had pain at rest.

TABLE NO.3 DISTRIBUTION OF PATIENTS ACCORDING TO PROCEDURE. (n=60)

PROCEDURE	NO. OF PATIENTS	PERCENTAGE
LICHTENSTEIN	18	30
TAPP	33	55
TEP	9	15

Out of our 60 patients 18 patients underwent Lichtenstein procedure, 33 underwent TAPP and 9 underwent TEP. There were 5 cases of recurrent hernias following Lichtenstein repair and were subjected to TAPP repair.

MESH TYPE	OPEN		LAPAROSCOPIC	
	L/W	H/W	L/W	H/W
POLYPROPYLENE	0	18	30	0
POLYCAPRION-POLYPROPYLENE	0	0	12	0

Table no.4 DISTRIBUTION ACCORDING TO MESH TYPE WITH RELATION TO PROCEDURE PERFORMED. (n=60)

In all 18 open procedures we used Heavy weight Polypropylene mesh. In 42 Laparoscopic procedures we used 30 Light weight polypropylene meshes and 12 light weight Polycaprion-Polypropylene meshes.

Table no.5 DISTRIBUTION OF PATIENTS ACCORDING TO INTRA-OPERATIVE COMPLICATIONS.

PROCEDURE	Inferior epigastric vessel injury	Peritoneal tear	General anaesthesia complications	Pneumoperitoneum related	Access injury	Bowel injury	Urinary bladder injury	Conversion
TAPP	2	0	0	0	0	0	0	0
TEP	0	4	0	0	0	0	0	0

During TAPP procedure 2 patients had inferior epigastric vessel injury and during TEP 4 patients had peritoneal tear. There was no conversion from laparoscopic to open procedure. There was no other trauma including bladder/bowel injury, access injury, pneumoperitoneum or general anaesthesia related injury.

FOLLOW UP AT 24 HRS BY VAS PAIN SCORE				
PROCEDURE	N	MEAN VAS PAIN SCORE	SD±	P-VALUE
LAP	42	4.3095	1.278	
OPEN	18	5.0556	0.8023	.009
TOTAL	60			

Table no.6 DISTRIBUTION OF PATIENTS ACCORDING TO PAIN ASSESSMENT USING VAS SCORE AT 24 HOURS POST SURGERY (n=60)

At 24 hours follow up pain assessment using VAS score was a mean VAS score of 4.3095 for Laparoscopic methods (TAPP & TEP) and a mean VAS score of 5.0556 for Open method (Lichtenstein) with a significant statistical p value of p= 0.009.

Table no.7 DISTRIBUTION OF PATIENTS ACCORDING TO PAIN ASSESSMENT USING VAS SCORE AT 1 WEEK POST SURGERY (n=60)

FOLLOW UP AT 1 WEEK BY VAS PAIN SCORE				
PROCEDURE	N	MEAN VAS PAIN SCORE	SD	P-VALUE
LAP	42	2.3333	.84584	
OPEN	18	3.6667	.48507	
TOTAL	60			<.001

At 1 week follow up pain assessment using VAS score was a mean VAS score of 2.333 for Laparoscopic methods (TAPP & TEP) and a mean VAS score of 3.6667 for Open method (Lichtenstein) with a significant statistical p value of < .001.

Table no.8 DISTRIBUTION OF PATIENTS ACCORDING TO PAIN ASSESSMENT USING VAS SCORE AT 3 WEEKS POST SURGERY (n=60)

FOLLOW UP AT 3 WEEKS BY VAS PAIN SCORE				
PROCEDURE	N	MEAN VAS PAIN SCORE	SD	P-VALUE
LAP	42	.9048	.69175	
OPEN	18	2.4444	.51131	
TOTAL	60			<.001

At 3 weeks follow up pain assessment using VAS score was a mean VAS score of 0.9048 for Laparoscopic methods (TAPP & TEP) and a mean VAS score of 2.4444 for Open method (Lichtenstein) with a significant statistical p value of < .001.

Table no.9 DISTRIBUTION ACCORDING TO WOUND RELATED COMPLICATIONS IN RELATION TO PROCEDURE WITHIN 30 DAYS and BEYOND (n=60)

WOUND COMPLICATIONS	OPEN(L)(n=18)		TAPP(n=33)		TEP(n=9)	
	COUNT	%	COUNT	%	COUNT	%
SEROMA	9	50	3	9.09	2	22.22
DEHISCENCE	0	0	0	0	0	0
SSI/PORT SITE INFECTION	7	38.33	2	6.06	1	11.11
HEMATOMA	7	38.33	2	6.06	0	0
DEEP ABSCESS	0		0	0	0	0
MESH INFECTION	0	0	0	0	0	0
RECURRENCE	0	0	0	0	0	0

Among patients who underwent open procedure 9 had wound seroma, 7 had surgical site infection and 7 had developed hematomas within 30th postoperative day. Among patients who underwent TAPP 3 had developed port site seroma within 30th postoperative day, 2 had developed port site infection and 2 had developed hematomas. Among patients who underwent TEP 2 had seroma, 1 had port site infection within 30th postoperative day. There was no case of mesh related infection. We didn't have any case of recurrence post repair in the given follow up duration.

Table no.10 DISTRIBUTION OF PATIENTS ACCORDING TO QUALITY OF LIFE ASSESSMENT AT 3 WEEKS FOLLOW UP POST OPERATIVELY USING CAROLINA COMFORT SCALE (n=60)

FOLLOW UP AT 3 WEEKS USING CCS SCORE				
PROCEDURE	N	MEAN CCS SCORE	SD	P-VALUE
LAP	42	35.476	4.527	
OPEN	18	58.611	7.236	
TOTAL	60			<.001

Three variables of CCSS were measured which are pain, sensation of mesh and limitation of movements.

At 3 weeks follow up Quality Of Life Using Carolina Comfort Scale Score was mean CCSS of 35.476 for Laparoscopic methods (TAPP & TEP) and mean CCSS of 58.611 for Open method (Lichtenstein) with a significant statistical p value of < .001.

Table no.11 DISTRIBUTION OF PATIENTS ACCORDING TO QUALITY OF LIFE ASSESSMENT AT 1 YEAR FOLLOW UP POST OPERATIVELY USING CAROLINA COMFORT SCALE (n=60)

FOLLOW UP AT 1 YEAR USING CCS SCORE				
PROCEDURE	N	MEAN CCS SCORE	SD	P-VALUE
LAP	42	1.0714	0.77752	
OPEN	18	6.1111	2.13896	
TOTAL	60			< .001

Three variables of CCSS were measured which are pain, sensation of mesh and limitation of movements.

At one year follow up Quality Of Life Using Carolina Comfort Scale Score was mean CCSS of 1.0714 for Laparoscopic methods (TAPP & TEP) and mean CCSS of 6.1111 for Open method (Lichtenstein) with a significant statistical p value of < .001.

Table no.12 DISTRIBUTION OF PATIENTS ACCORDING TO PRE-OPERATIVE ASSESSMENT OF SEXUAL ACTIVITY (n=60).

Sexual activity	Pre-operative	
	No. of patients	Percentage
Satisfied	42	70%
Not Satisfied	8	13.33%
Abstained	10	16.66%
Total	60	100%

Out of 60 patients, 10 patients abstained from sexual activity due to personal/religious reasons. Out of remaining 50 patients who were sexually active within 3 months prior to surgery, 8 patients were not satisfied because of pain and discomfort during such activity. Rest 42 patients were satisfied with their sexual activity.

Table no.13 DISTRIBUTION OF PATIENTS ACCORDING TO ONE MONTH POST-OPERATIVE ASSESSMENT OF SEXUAL ACTIVITY (n=50).

Sexual activity	1 Month Post-operative	
	No. of patients	Percentage
Satisfied	50	100%
Not Satisfied	0	0%
Total	50	100%

At one month follow up of none of the pre operatively 50 sexually active patients complained of any pain or discomfort while initiating sexual activity and all were satisfied with the result.

Table no.14 distribution of patients according to duration of hospital stay. (n=60)

	OPEN(days)	LAPAROSCOPIC(days)	p value
Mean duration of hospital stay	4.63	2.33	
SD±	1.388	0.833	<0.001

In our 60 patients mean duration of hospital stay (days) was 4.63±1.388 for open procedure and 2.33±0.833 in case of laparoscopic repairs with a significant statistical p value <0.001.

Table no.15 DISTRIBUTION OF PATIENTS ACCORDING TO THE CHANGE IN PREOPERATIVE PAIN INTENSITY BASED ON MEAN VAS SCORES. (n=60)

MEAN VAS SCORE POST OPERATIVELY	LAPAROSCOPIC PROCEDURE	OPEN (L) PROCEDURE
AT 24 HOURS	4.3095	5.0556
AT 1 WEEK	2.3333	3.6667
AT 3 WEEKS	0.9048	2.4444
AT 3 MONTHS	0	0.7778
AT 6 MONTHS	0	0

At 24 hour post-surgery mean VAS score for laparoscopic approach was 4.3095 and for open were 5.0556. Post 1 week mean VAS score for laparoscopic approach was 2.3333 and for open was 3.6667. At 3 weeks post-surgery mean VAS score for laparoscopic method was 0.9048 and for open method was 2.4444. At 3 months follow up no patient had pain from laparoscopic group while mean VAS score for open procedure was 0.7778. Post 3 months all 60 patients were pain free.

Discussion

Median age of our study was 51.75 years which is comparable to studies conducted by Lovisetto, et al.[6] having median age of 52.5 years, Kockerling, et al.[7] having median age of 55.04 years.

In our study 75% of patients had preoperative pain associated with hernia only on physical activities which included climbing stairs, sports activity, standing, everyday entertaining activities, standing up from chair, driving and cycling. Among which 61.66% had mild pain, 13.33% had moderate pain and there was no severe pain during physical activity. No pain was present at rest in all patients. 60% of patients had preoperative pain since 3-6 months and 15% had history of pain for 6-12 months. There was no patient who had pain more than one year. In contrast to study conducted by Mitura, et al.[8], 57% patients had pain at rest among 94.8% of patients who had pain on physical

activities. In another study conducted by Dickinson, et al.[9] 140 patients (26%) had severe preoperative pain and out of which 36 patients (26%) developed chronic post-operative pain. they were of the view that severe preoperative pain is a risk factor for developing chronic postoperative pain. In contrast to our study no case of severe postoperative pain was observed. laparoscopic repairs. Chronic pain is a postoperative complication, which is associated with discomfort, pain and affects quality of life. Sajid, et al.[10] noted that the etiology of chronic pain is unclear, but is thought to include inguinal nerve irritation by suture or mesh, inflammatory reaction to mesh and foreign material, scarring incorporating inguinal nerves. In 2014 update of the European Hernia Society guidelines based on meta-analysis data, there was no difference in chronic pain after Lichtenstein repair when compared to TEP hernia repair (Miserez, et al.[11] However review of prospectively collected data of 17388 patients demonstrated worse pain on exertion in Lichtenstein group repairs at one year post surgery with a rate of 9.23% compared to 7.9% in TEP group with overall incidence of 8.7%. Hence laparoscopic repair seems to reduce chronic pain postoperatively compared to open Lichtenstein repair (Kockerling, et al.[12] In Our study although pain scores were nil except for two cases of numbness in the distribution of ilioinguinal nerve repaired by open approach. This is comparable to our study were postoperative pain was less in TEP group compared to open Lichtenstein repairs. Although complications of this surgery have greatly decreased of late, chronic inguinal pain and impairment in quality of life due to the operation is still a serious consideration, and its incidence is evident in approximately 3%–6% of the patients S. Alfieri, et al.[13]

A comparative study between TEP and open-mesh herniorrhaphy using a retrospective questionnaire in 560 patients, after mean follow-up period of 21 months showed 22.5% of laparoscopic patients had pain compared with 38.3% of those treated by open mesh repair (Kumar S, et al.)[14]. Post-operative pain in all the cases decreased in intensity with passage of time. At 24 hours post-surgery pain assessment using VAS score was a mean VAS score of 5.0556 for Open method (Lichtenstein) and a mean VAS score of 4.3095 for Laparoscopic methods. Among open repairs 22.22% reported to have mild pain and 77.77% reported to have moderate pain. Among laparoscopic repairs 33.33% reported to have mild pain and 66.67% reported having moderate pain. Intensity of pain reduced further at one week post repair which was a mean VAS score of 3.66 for open repairs and a mean VAS score of 2.33 for laparoscopic repairs. At three weeks post-surgery pain assessment using VAS score was a mean VAS score of 0.9048 for Laparoscopic methods (TAPP & TEP) and a mean VAS score of 2.4444 for Open method (Lichtenstein).

At 3 months follow up pain assessment using VAS score was a mean VAS score of 0.00 for Laparoscopic methods (TAPP & TEP) and a mean VAS score of 0.7778 for Open method (Lichtenstein). Post 3 months all 60 patients were pain free at 6 months post-operative follow up. One of the largest study in 300 patients reported with incidence of 3.3% CPSP following laparoscopic TEP repair as compared to 9.7% after Lichtenstein's mesh procedure (Bringman S, Ramel S, et al.)[15]. It has been reported in the literature that the two laparoscopic techniques i.e. TAPP and TEP, had better outcomes as compared to open Lichtenstein technique of inguinal hernia repair in terms of diminished acute and chronic postoperative pain, improved recovery time, shorter hospital stay, earlier return to work and better outcomes pertaining to chronic pain and quality of life (Bansal et al 2013). In contrast to our study we had better outcome in TEP as compared to TAPP and we agree with this study that laparoscopic inguinal hernia repair has better outcome than open technique, since we did not used any fixation in TEP group.

POTOPERATIVE SEXUAL ACTIVITY

In our study out of 50 pre operatively sexually active patients, 17 patients on 1 week follow up complained of being not satisfied due to pain and discomfort while initiating such activity. While rest of 33 patients out of 50 were satisfied with their sexual activity. At one month follow up, none of the pre operatively 50 sexually active patients complained of any pain or discomfort while initiating sexual activity and all were satisfied with the result. As reported in the literature the

presence of preoperative pain and inguinal hernia surgery may have an effect on sexual activity (Tolver, at al. 2015)[16].

COMPLICATIONS

In our study post-operative wound/port site infection developed in 38.33% of Lichtenstein repair patients, 6.06% of TAPP repair patients and 11.11% of TEP repair patients which were managed conservatively. 50% of Lichtenstein repairs developed seroma, 9.09% of TAPP repairs developed seroma and 22.22% of TEP repairs developed seroma all of which regressed within three weeks. 38.33% of Lichtenstein repairs were found to have developed scrotal hematomas and 6.06% in TAPP repairs. No other complications including mesh infection was observed in any group The risk of serious complications appears to be lower in open approach as compared with laparoscopic repair. Post-operative seroma formation is a non-serious complication though troublesome for the patient. It occurs frequently in inguinal region. A retrospective chart review examined outcomes of 1,240 laparoscopic hernia operations in 783 patients which demonstrated only 3% incidence of seroma (Reiner MA, Bresnahan ER.)[17]

HOSPITAL STAY

Mean days of hospital stay for Liechtenstein repair was 4.63 days and for laparoscopic repair it was 2.33 days. In a study conducted by Andersson et al.[18] the average hospital stay was 13.6 hours in TEP group and 12.4 hours in open group. 63% of the patients were discharged within 12 hours. In total all patients were discharged within 30 hours. These results are in contrast with our study as the mean hospital stay in laparoscopic group was 2.33±0.833 and in open it a mean of 4.63±1.388 days. In our experience, time to return to normal activity is rather subjective and shorter for laparoscopic group of patients in comparison to open repair.

Conclusion

We recommend following recommendations to mitigate the possibility of post-operative groin hernia pain.

1. The routine use of light weight mesh for groin hernia repair is strongly advised for both open and laparoscopic approaches.
2. Affixation of mesh with biological adhesive is an option, but as we used fibrin glue in only 3 cases where pain was less we cannot comment.
3. Laparoscopic technique should be preferred over open Lichtenstein repair if it is feasible.
4. As a part of standard technique any sutures or tacks are to be placed meticulously with direct visualization, precision and awareness of surrounding structures especially nerves.
5. Affixation of mesh with tacks/sutures should be preferably at cooper's ligament, supramedial and supralateral above inguinal tract (1-3 sites).
6. In hernia surgery one cannot use the same technical procedure in all patients. Different patients require different hernia repairs and use of different mesh prosthesis. Using the same technical approach for all patients is a setup for chronic pain. The precise need for individual technique with some standardization is paramount in each and every patient.

We recommend Visual analogue scale for assessment of pain and Carolina comfort scale for assessment of quality of life in inguinal hernia mesh repairs.

Conflict of interest: Nil

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