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A Randomized Control Prospective Comparative Study Of Lichtenstein Tension Free Hernioplasty Under Local Anaesthesia Versus Spinal Anaesthesia At Tertiary Care Health Centre, Bikaner

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Abstract

Introduction: Lichtenstein carried out a series of laboratory & clinical investigations, comparing various prosthetic materials and, in 1991, reported that monofilament polypropylene stimulates a strong fibroblastic response throughout the interstices and also has a marked resistance to infection.

Material and Methods: The Study was carried out in the Department of Surgery, PBM Hospital, Sardar Patel Medical College Bikaner during the 8 month period from January 2017 to 30 August 2017. A total 100 patients taken were divided into two random groups, one group (Group I) with hernia repair done under local anaesthesia and second group (Group II) Hernia repair done under spinal anaesthesia.

Results : Cost of hernioplasty less in local anaesthesia group (mean 157.88±24.82 Rs.) as compared to spinal anaesthesia (mean 831.20±203.63 Rs.). Total operative time is less in local anaesthesia group 40.14±5.41 minutes as compared to spinal anaesthesia group 54.58±6.78 minutes.

Conclusion : Overall, local anaesthesia was associated with less immediate post operative complication. No recurrences were noted during the study period. It is apparent from the study that local anesthesia is a better alternative to spinal anesthesia from short stay or day care surgery.

Keywords: spinal anesthesia, local anesthesia, hernia.

Introduction

The approach to management of a hernia is mostly surgical, even if detected early, because almost all hernias progressively enlarge in size and cause discomfort with the passage of time and are potentially associated with intestinal strangulation and incarceration[1]. The only exception to this rule are the patients with a short survival because of co-existent morbidity or because of severity of a co-morbid disease.

Day care hernia can be successfully performed in one setup hospital stay and expenses of treatment on hospital resources are significantly reduced. The compliance and acceptability of the patient and ease of carrying out the procedure under local anaesthesia by surgeon is acceptable[2,3].

In the modern era of repair various techniques are used like pure tissue repair, darn repair, mesh repair and laparoscopic hernia repair. Nowadays hernia repair is becoming "tensionless & suturless" operation. Lichtenstein tension free inguinal hernia repair is one of the most common procedure which is used by general surgeons for hernia repair which takes in to account to

strengthen the posterior wall by mesh, without disturbing the anatomy of inguinal canal. The advent of mesh repair is an important step in hernia repair and has almost become a "Gold Standard" in the last two decades for the repair of inguinal hernia because of it's relative simplicity, safety and low recurrence. Various non degradable and biologically tolerant synthetic mesh prosthesis are readily available like marlex, prolene, trelax, mersilene and goretax[4].

Material and Methods

The study was carried out in the Department of Surgery, PBM Hospital, Sardar Patel Medical College Bikaner during the 8 month period from January 2017 to 30 August 2017. A total 100 patients taken were divided into two random groups, one group (Group I) with hernia repair done under local anaesthesia and second group (Group II) Hernia repair done under spinal anaesthesia. For final statistical analysis only patient with final diagnosis of uncomplicated inguinal hernia with hernioplasty (Mesh applied) were considered.

Technique of administration of local anesthesia used

The skin was infiltrated 2 cm above and medial to the anterior superior spine, deep to the external oblique aponeurosis with approximately 10ml of solution of 2% in a fan shaped manner to block the iliohypogastric and ilioinguinal nerves, and the last two intercostals nerves. Mid inguinal point was infiltrated with another 10 ml of 2% lignocaine deep to the external oblique to block the genital branch of the genitor-femoral nerve.

Tension free Lichtenstein hernioplasty was done in both groups. Material used for hernioplasty was Polypropylene Prosthetic mesh. The following parameters are studied in both local anaesthetic & spinal anaesthetic group-1.Time taken for the procedure: this included time taken from giving anaesthesia to completion of surgery.

Placement and fixation of mesh

A 7.5 × 15 cm piece of polypropylene mesh is commonly used for a Lichtenstein hernioplasty. On the medial side, the sharp corners of the mesh are trimmed to conform to the patient's anatomy. For a femoral hernia, the mesh is tailored so that it has a triangular extension from its lower edge on its medial side.

To compensate for future shrinkage, the mesh should be wide enough to extend 3-4 cm beyond the boundary of the inguinal triangle. To compensate for increased intra-abdominal pressure when the patient stands up, the mesh should be placed lax in the posterior wall of the inguinal canal in such a way that it acquires a domelike wrinkle.

The first medialmost stitch fixes the mesh 2 cm medial to the pubic tubercle, where the anterior rectus sheath inserts into the pubic bone (see the image below). Care should be taken not to pass the needle through the periosteum of the bone or through the pubic tubercle; this is one of the most common causes of chronic postoperative pain.

The same suture is then used as a continuous suture to fix the lower edge of the mesh to the free lower border of inguinal ligament up to a point just lateral to the internal ring (see the images below). No more than four or five passes are required.

For a femoral hernia, the medial portion of the iliopubic tract is excised, and the Cooper ligament is exposed. The lower triangular extension on the medial side of the mesh is stitched to the Cooper ligament, and the suture is continued to fix the lower edge of the mesh to the inguinal ligament, as above.

Next, a slit is made in the lateral end of the mesh to create a narrower lower tail (the lower one third) and a wider upper tail (the upper two thirds). The slit extends up to a point just medial to the internal inguinal ring.

The upper tail is then passed underneath the cord in such a way as to position the mesh posterior to the cord in the

inguinal canal, and the spermatic cord is placed between the two tails of the mesh. The upper tail is then crossed over the lower one, and the two tails are held in an artery forceps.

With the mesh kept lax, its upper edge is then fixed to the rectus sheath and the internal oblique aponeurosis with two or three interrupted nonabsorbable sutures. On occasion, the iliohypogastric nerve is found to be in the way of upper edge of the mesh. In such cases, the mesh may be split to accommodate the nerve.

The two tails are then tucked together and fixed to the inguinal ligament just lateral to the internal ring, thus creating a new internal ring made of mesh (see the first image below). The tails are trimmed 5 cm beyond the internal ring and placed underneath the external oblique aponeurosis.

Suturing the mesh beyond the internal ring is unnecessary; doing so may cause injury to the femoral nerve. Similarly, fixation of the tails of the mesh to the internal oblique muscle, lateral to the internal ring, may cause entrapment of the ilioinguinal nerve. Trying to suture the two tails without crossing them or trimming the tails shorter than 5-6 cm beyond the internal ring may result in recurrence at the deep inguinal ring.

If any of the nerves is injured or of doubtful integrity, it can be resected and its proximal end ligated and buried within the fibers of the internal oblique muscle to keep the stump of the nerve away from scarring.

In male patients, the testes should always be gently pulled back down to their normal scrotal position after fixation of the mesh.

Closure

Spermatic cord layers are closed with fine sutures, with care taken to avoid damaging the cord contents. Hemostasis is ensured in the inguinal canal, which is then closed by suturing the two flaps of the external oblique aponeurosis, with care taken not to injure the underlying ilioinguinal nerve. Suturing is started laterally and continued medially, where an adequate opening is left at the newly created superficial inguinal ring so as not to occlude the emerging spermatic cord.

Subcutaneous tissue is approximated with interrupted sutures to obliterate any dead space, and the skin is approximated with sutures, clips, or adhesive strips. A subcuticular continuous stitch with 3-0 absorbable sutures obviates any need for stitch or clip removal and provides better cosmetic results. The operative site is cleaned and a sterile dressing applied.

Results

Mean age in local anaesthesia group was 57.42±12.59 years while in spinal anesthesia group it was 38.64±14.92 years and this difference was found statistically highly significant ($p<0.001$). Period of postoperative stay in hours, local anaesthesia group had lower postoperative stay in comparison to spinal anaesthesia group.

In local anaesthesia group, 41 patients taken time for induction $\leq$5 minutes while 9 patients taken time for 6-10 minutes. In spinal anaesthesia group 26 and 24 patients time taken for induction 11-15 and >15 minutes respectively.

No patient had operative time $\leq$30 minutes while 34 patients had operative time 31-40 minutes and out of them 33 patients belonged to local anaesthesia group, 36 patients had operative time 41-50 minutes and out of them 16 and 20 belonged to local and spinal anaesthesia group respectively while 30 patients had operative time >50 minutes and out of them 1 and 29 belonged to local and spinal anaesthesia group respectively.

It is clearly depicted from above that spinal anaesthesia group had more cost of surgery in comparison to local anaesthesia. Mean cost of local anaesthesia group was 157.88±24.82 rupees while in spinal anaesthesia group it

was 831.20±203.63 rupees. On applying student 't' test, the difference was found statistically highly significant ($p<0.001$).

Discussion

In present study, local anaesthesia group had lower postoperative operative stay in comparison to spinal anaesthesia group. Out of total 50 local anaesthesia group patients, 49 had their postoperative stay <24 hours and only 1 patient had his postoperative stay >24-36 hours while in spinal anaesthesia group no patient had <12 hours of postoperative stay while only 7 patients had 12-24 hours of postoperative stay. Mean postoperative stay in local anaesthesia was 14.76±5.76 hours and in spinal anaesthesia group it was 40.46±16.12 hours and this difference was found statistically highly significant ($p<0.001$).

In the year 2016, Saxena and Saxena[5] observed that in local anaesthesia group duration of hospitals stay range from 8 hours to 90 hours. Mean duration of hospital stay was 18.42 hours. In spinal anaesthesia group none of the case was taken as day care surgery. The duration of hospital stay range from 27 to 98 hours and mean duration of hospital stay in this group was 56 hours.

Our study has the same results the postoperative hospital stay was significantly low in local anaesthesia group as compared to spinal anaesthesia group. It is due to less post anaesthesia recovery period, early mobilization and less pain following surgery are the likely factors behind less hospital stay period.

It is clearly depicted from our study that spinal anaesthesia group had more cost of surgery in comparison to local anaesthesia. Mean cost of local anaesthesia group was 157.88±24.82 rupees while in spinal anaesthesia group it was 831.20±203.63 rupees ($p<0.001$). It involved money spent in anaesthetic drug postoperative complications and it management. It would not an exaggeration to say that these days anaesthetic drugs have uncontrolled and exorbitant prices and the expenditure on anaesthesia is almost equal to that of on surgery.

In our series, in local anaesthesia group, 41 patients taken time for induction ≤5 minutes while 9 patients taken time for 6-10 minutes. In spinal anaesthesia group 26 and 24 patients time taken for induction 11-15 and >15 minutes respectively.

According to duration of surgery time, no patient had surgery time ≤30 minutes while 34 patients had surgery time 31-40 minutes and out of them 33 patients belonged to local anaesthesia group, 36 patients had surgery time 41-50 minutes and out of them 16 and 20 belonged to local and spinal anaesthesia group respectively while 30 patients had surgery time >50 minutes and out of them 1 and 29 belonged to local and spinal anaesthesia group respectively.

A study conducted by Hiquemat and Ahmed[6], the time was calculated in both the groups from the time of anaesthesia till dressing. In SA group the mean operating time was 64.8 ± 10.12 minutes & in LA group 52.06±6.78 minutes. The difference was statistically significant ($p<0.0005$). Goyal et al[7] reported mean operative time of 42.8±8.6 minutes for cases operated under local anesthesis and 64.45±13.7 minutes for those operated under spinal anesthesia. Kumar et al[8] (reported the average operative time taken in hernia repair as 39.84 minutes and 56.36 minutes in local and spinal anaesthesia respectively. Aphykunchorn et al[104] reported that the mean of operating time was significantly lower in the local anesthesia group ($p = 0.02$).

Conclusion

Though both local & spinal anaesthesia can be used for hernia repair on short stay basis, spinal anaesthesia was found to have higher complication rates compared to local anaesthesia. There is significant increase in general

complications like nausea, vomiting, urinary retention and headache in spinal anaesthesia. The mean operating time was much shorter with local anesthesia. We found that there was a marked reduction in postoperative pain in local anaesthesia group as compared to the spinal anaesthesia group. Post operative ambulation was markedly quicker with local anesthesia. The duration of hospital stay was shorter and the return to normal activity faster with local anesthesia. Overall, local anaesthesia was associated with less immediate post operative complication. No recurrences were noted during the study period. It is apparent from the study that local anesthesia is a better alternative to spinal anesthesia from short stay or day care surgery. When short stay service is implemented there will considerable savings to hospital service & to the patients.

References

1. Dahlstrand U, Wollert S, Nordin P, Sandblom G, Gunnarsson U. Emergency femoral hernia repair: a study based on a national register. Ann Surg 2009;249(4):672–6.
2. Javid P, Brooks D. Hernias. In: Ashley SW, Zinner M, Maingot R, editors. Maingot's abdominal operations. 11th ed. New York: McGraw-Hill Publishing; 2007; pp103–40.
3. Skandalakis PN, Zoras O, Skandalakis JE, Mirilas P. Richter hernia: surgical anatomy and technique of repair. Am Surg 2006;72(2):180–4.
4. Bassini E Nuovo metodo per la cura radical dellernia inguinale.Atti congr assoc Med ital 1887; 2 ; 179-182.Cited in Prolene Meshplasty in hernia repair, by Jayant Sharma SP Rai et al IDS 1997; 5910:289.
5. Saxena P, Saxena S. A prospective comparaivie study of Lichtenstein's mesh hernioplasty performed under local and spinal anesthesia. Int Surg J 2016; 3(3):1477-1485.
6. Hiquemat N, Ahmed H. A comparative study of hernioplasty done under local and spinal anaesthesia in a tertiary care centre. IOSR-JDMS 2017; 16(4):18-24.
7. Goyal P, Sharma SK, Jaswal KS, Goyal S, Ahmed M et al. Comparison of inguinal hernia repair under local anesthesia versus spinal anesthesia. IOSR-JDMS 2014; 13(1):54-59.
8. Kumar A et al. A prospective comparative study of Lichtenstein tension free hernioplasty under local anesthesia and spinal anesthesia, Scholars Journal Of Applied Medical Sciences(SJAMS) ISSN2320-6691 (Online) Sch J App Med Sci 2013; 1(6):934-936.

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Table 1: Distribution of cases according to Time Taken for induction of anaesthesia (min).

Time Taken for induction of anaesthesia (min)	Type of Anaesthesia				Total	
	Local		Spinal			
	No.	%	No.	%	No.	%
≤5	41	82.0	0	-	41	41.0
6-10	9	18.0	0	-	9	9.0
11-15	0	-	26	52.0	26	26.0
>15	0	-	24	48.0	24	24.0
Total	50	100	50	100	100	100

Table 2: Distribution of cases according to Total Operative Time (min)

Operative Time (minutes)	Type of Anaesthesia				Total	
	Local		Spinal			
	No.	%	No.	%	No.	%
≤30	0	-	0	-	0	-
31-40	33	66.0	1	2.0	34	34.0
41-50	16	32.0	20	40.0	36	36.0
>50	1	2.0	29	58.0	30	30.0
Total	50	100	50	100	100	100
Mean	40.14		54.58			
SD	5.41		6.78			
t	11.760					
p	<0.001					

Table 3: Distribution of cases according to cost of surgery in relation to type of anaesthesia

Cost (Rs.)	Type of Anaesthesia				Total	
	Local		Spinal			
	No.	%	No.	%	No.	%
<400	50	100	0	-	50	50.0
400-500	0	-	5	10.0	5	5.0
501-600	0	-	5	10.0	5	5.0
601-700	0	-	3	6.0	3	3.0
701-800	0	-	1	2.0	1	1.0
801-900	0	-	16	32.0	16	16.0
>900	0	-	20	40.0	20	20.0
Total	50	100	50	100	100	100
Mean	157.88		831.20			
SD	24.82		203.63			
t	23.209					
p	<0.001