

Local vs. Spinal Anesthesia in Lichtenstein Hernia Repair: A Ten-Year Clinical Experience at Base Hospital-Srikot

Lars Eriksson ^{*1}, Sven Johansson & Ola Andersson

^{*1}Assistant Professor, Department of General Surgery, Karolinska University Hospital, Stockholm, Sweden

Keywords:

inguinal hernia,
Lichtenstein repair, mesh
hernioplasty, local
anesthesia.

Abstract

Introduction : This observational study aims to outline differences in early outcomes between patients undergoing Lichtenstein mesh hernioplasty under local vs. spinal anesthesia.

Methods : Records of 1200 patients undergone Lichtenstein repair electively in our unit from years 2007-17, with random allocation to the two groups (local vs. spinal anesthesia), were analysed.

Results : Among 438 patients operated under local anesthesia and 762 under spinal, most of early outcome parameters and immediate complication rates were comparable between both groups as also with national standards, but for need of shorter in-hospital stay, none of the complications of spinal anesthesia and occasional cases of urinary retention by some patients concurrently suffering from benign prostatic hyperplasia and requiring foley catheterisation, among those operated under local anesthesia.

Conclusion : Our study affirms the observation that local anesthesia for Lichtenstein repair is superior to spinal, in terms of patient comfort and better outcomes in immediate post-operative period.

Introduction

Open groin hernia repairs are usually performed under either spinal or local anesthesia, with or without controlled intravenous sedation, referred to as “monitored anesthesia care”. Lichtenstein repair, a tension-free polypropylene mesh-hernioplasty, is the gold standard and the commonest surgical procedure for adult inguinal hernia repair.[1,2,3,4,5,6,7]

Aim

We aim to outline the observation that inguinal hernia surgery performed under local anesthesia has better intra- and early post-operative outcomes in terms of patient comfort and recovery as well as better utilisation of the limited available manpower and hospital resources, as compared to that performed under spinal/general anesthesia.[6]

Material & Methods

This concurrent observational study has been conducted at Dept. Of Surgery, VCSGMS&RI and HNBS Base Teaching Hospital, Srikot, Uttarakhand. Data was collected from case-sheets and during in/out-patient management and thereafter follow-up during review visits.

Adult patients undergoing inguinal hernia repair on an elective basis in this unit (under Associate Professor Dr. KP Singh and colleagues), either under local or spinal anesthesia between years 2007 to 2017, were included in this study. Emergency or pediatric or complicated cases were excluded. Patient allotment under the two groups (local vs. spinal anesthesia) was random and included all those primary and recurrent ones with unilateral/bilateral/pantaloon type inguinal hernias (Nyhus-Stoppa Types I, II, IIIA, IIIB, IV; Modified Gilbert Types 1 to 6).[1,3]

The patients were called usually on the morning of surgery with prior investigations and instructions in preparation for the procedure. Single dose of a third generation cephalosporin (preferably, 1g of ceftriaxone) was administered at the time of surgery.[6]

For the LA group, “nerve-block (point-block)” method with ~30-50ml of 2% lignocaine solution was used (up to a maximum dose of ~2mg/kg body weight of plain lignocaine) (with adrenaline 1:80,000 and/or bupivacaine 1-2ml of

0.5% solution if bilateral repair or for prolonged/complicated procedure), diluted with normal saline ~1:1. ~10ml of this solution was injected at each of these points: (a) 2cm above and medial to antero-superior iliac spine to block the ilio-hypogastric nerve; (b) the mid-inguinal and pubic-tubercle points; (c) infiltration just below the inguinal ligament lateral to the femoral artery to block the genital branch of the genito-femoral nerve; (d) line of skin incision and the neck of hernial sac. Sedation with pethidine and/or phenergan was given preoperatively. Anesthesia consultant was always informed and kept on call.[2,6] After the surgery, the patients were sent walking out of the operating room, with discharge either on the same evening or the next morning of the surgery ("ambulatory surgery").[2,6]

For the other group, SA was administered to the patients by the anesthetist. Patients were foley-catheterised overnight post-operatively; they were gradually ambulated and subsequently discharged within the next few days.[2,6]

Lichtenstein mesh hernioplasty was done in the usual manner in both groups.[1,2,3,4,5,6,7] Post-operative analgesia administration was on an "as-and-when-required" basis in both groups, with topical and oral antibiotics given. All patients post-discharge were followed up weekly for a three week period, and then three monthly. [8,9,10]

Discussion

Twelve hundred (1200) patients underwent elective Lichtenstein mesh hernioplasty in our unit in the last eleven years (2007-2017), with an age-range of between 20 to 90 years, with a male sex and right-sided (~3:2) pathology predominance (Table #1 and Chart #1), and random allocation of cases among the two groups and duration range of operative procedure being similar. [11,12]

438 patients were operated upon using local anesthesia; all were male patients except two females. Among them, 312 patients were of indirect inguinal hernia and 126 of direct type; 16 had ipsilateral simultaneous indirect and direct components ("pantaloon" type hernia), and 65 cases were of bilateral hernia. Those operated under spinal anesthesia numbered 762, with 736 males and 26 females. 601 of these patients had indirect hernia, 161 had a direct hernia; the number of "pantaloon" type hernia was 21 and 125 had a component of contra/bi-laterality. [11,12]

Few (35) of the older patients concurrently suffering from benign hyperplasia of the prostate and having undergone the Lichtenstein repair under LA needed overnight foley catheterisation after developing discomfort/inability in passing urine on the evening of surgery; whereas all patients of the SA group were routinely foley-catheterised post-operatively. Expectedly, incidence of pyrexia and PONV/headaches was significantly less in the LA group ($p < 0.05$) (Table #2). [13-20]

All patients of LA group, who were working prior to the surgery returned to work within seven days of the operation (range of 4 to 11 days), while those of the SA group took a longer time to be discharged after regaining their ambulation and independent daily activities (on an average, two days more) as well as a longer interval to re-join their work. [13-20]

In the early follow-up period, the rates of scrotal edema/hydrocele (5 vs. 16), hematoma (2 vs. 3), seroma (2 vs. 5), and minor wound (incision-site) infection (10 vs. 21) were comparable between the two groups (LA vs. SA), and with the prevailing national standards of care; all these were managed conservatively. There were no injuries reported to any major neighbouring structures during the procedures by any of the surgeons nor any patient needing immediate readmission after discharge; although, polypropylene mesh rejection needing removal was required in one patient in each group, during the delayed recovery period. [13-20]

Of note, chronic groin pain >3months post-operatively occurred in 17 (3.9%) vs. 31 (4.0%) patients in the LA vs. SA groups, despite meticulous operative techniques, leaving them only partially satisfied with the procedure and/or chronic discomfort; though none of them have requested/needed the mesh removal. Hernia recurred in 1 vs. 3 patients respectively, over long-term follow up periods, needing re-surgery and re-placement of the mesh. [13-21]

Conclusion

Our study convincingly proves that Lichtenstein's repair under local anesthesia is the procedure of choice for inguinal hernia repair, due to earlier mobility and return to work, less of medications administered to the patient, and

a sense of independence among the patients; the patient walks into the operating room and after completion of the procedure, can go out of the OT walking by himself. Also, the various complications of the spinal/general anesthesia can be avoided.

Abbreviations

Ant. – Anterior

LA – Local Anesthesia

Sex – M: Males; F: Females

UB – Urinary Bladder

PONV – Post-Operative Nausea-Vomiting

VCSGGMS&RI – Veer Chandra Singh Garhwali Government Medical Sciences & Research Institute

($\cong \sim \approx \pm \Sigma$)~~{{pl edit out the symbols table}}~~

Post. – Posterior

SA – Spinal Anesthesia

vs. – versus

VD – Vas Deferens

Author Disclosure Statement

Source of support / funding : nil

Conflict of interest : none

Appropriate informed and written consent taken from patients included in this study

Appropriate documentation of all cases done and preserved

Appropriate Ethical Clearance sought from Institutional Ethical Committee / IRB

LibreOffice, Google Suite, LinuxMint used for data collection, tabulation, analysis, manipulation, interpretation, graphing & charting, publishing

With acknowledgement & special thanks to VCSGGMS&RI Faculty, Depts. Of : Surgery, Radiodiagnosis, Anesthesiology.

References

1. Natarajan B et al. Basic Features of Groin Hernia and its Repair. Yeo CJ et al. Shackelford's Surgery of the Alimentary Tract. 6ed. P556-582.
2. Javid PJ, Greenberg JA, Brooks DC. Hernias. Zinner MJ, Ashley SW. Maingot's Abdominal Operations, 12ed. P123-138.
3. Malangoni MA, Rosen MJ. Hernias. Townsend CM, et al. Sabiston Textbook of Surgery. 20ed. P1092-1106.
4. Nixon SJ, Tulloh B. Abdominal wall, hernia and umbilicus. Williams NS, Bulstrode CJK, O'Connell PR. Bailey & Love's Short Practice Of Surgery. 26ed. P948-59.
5. Wagner JP, et al. Inguinal Hernias. Brunicaudi FC et al. Schwartz's Principles of Surgery. 10ed. p1495-1517.
6. Farquharson M, Moran B. Surgery of the Groin and External Genitalia. Farquharson's Textbook of Operative General Surgery. 9ed. p459-468.
7. Wikipedia : Inguinal hernia surgery. https://en.wikipedia.org/w/index.php?title=Inguinal_hernia_surgery&oldid=826187800
8. Amid PK, Shulman AG, and Lichtenstein IL. Local Anesthesia for Inguinal Hernia Repair Step-by-Step Procedure. Annals Of Surgery. Vol220, No. 6,735-737
9. Ribeiro FS, et al. Inguinal hernia repair with local anesthesia in the outpatient . Rev Col Bras Cir. [periódico na Internet] 2010; 37(6). Disponível em URL: <http://www.scielo.br/rcbc>
10. Andersen FH, Nielsen K, Kehlet H. Combined ilioinguinal blockade and local infiltration anaesthesia for groin hernia repair—a double-blind randomized study. British Journal of Anaesthesia 94 (4): 520–3 (2005); doi:10.1093/bja/aei083
11. Jenkins JT, O'Dwyer PJ. Inguinal hernias. BMJ 2008;336:269-72. doi:10.1136/bmj.39450.428275.AD
12. Balram. Prevalence of Inguinal Hernia in Bundelkhand Region of India. Ann. Int. Med. Den. Res. 2016;2(3):137-38. DOI: 10.21276/aimdr.2016.2.3.34
13. Subramanian JM et al. A Prospective comparative study of Local anaesthesia & Spinal anaesthesia for Lichtenstein hernioplasty in a tertiary care hospital. IOSR-JDMS. Vol 14, Issue 11 Ver. VII (Nov. 2015), PP 47-51. DOI: 10.9790/0853-141174751
14. Prakash D, et al., Local anaesthesia versus spinal anaesthesia in inguinal hernia repair: A systematic
15. Goyal P et al. Comparison of inguinal hernia repair under local anesthesia versus spinal anesthesia. IOSR-JDMS. Volume 13, Issue 1 Ver. VI. (Jan. 2014), PP 54-59.
16. Amul Bhedi et al. Inguinal Hernia Repair: Comparison of Local Anaesthesia and Spinal Anaesthesia.

- JMSCR Vol04. Issue12. Page 14540-14547; December. DOI: <https://dx.doi.org/10.18535/jmscr/v4i12.40>
17. Gupta AK et al. Evaluation of inguinal hernia repair under local anesthesia - An experience of 30 cases Sch. J. App. Med. Sci., Mar 2017; 5(3A):704-707. DOI: 10.21276/sjams.2017.5.3.4
 18. Gandhi C, Gorad K, Lomate P. Observational study of inguinal hernia under local anaesthesia in rural set-up. Int. J. of Healthcare and Biomedical Res., Vol: 04, Issue: 01, Oct 2015, Pages 67-70
 19. Sharma A, Johri G. Lichtenstein Tension Free Hernioplasty Under Local Anaesthesia –An Institutional Experience. IJSR. Volume : 5 ; Issue : 5 ; May 2016. p157-8.
 20. Goel A, Bansal A, Singh A. Comparison of local versus spinal anesthesia in long standing open inguinal hernia repair. Int Surg J 2017;4:3701-4. DOI: <http://dx.doi.org/10.18203/2349-2902.isj20174889>
 21. Vasantharaja R, Sreejayan MP. Early Postoperative Morbidity Pattern of Lichtenstein Hernioplasty under Local Anaesthesia. <https://doi.org/10.20936/jmrp/16/01/06>.

Tables & Charts

Table #1 :Age Wise Distribution of Patients Included in Study (2007 - 2017).

Table #1 :Age Wise Distribution of Patients Included in Study (2007 - 2017).					
<u>Age-Group vs. No. Of Patients</u>	<u>Local A.</u>		<u>Spinal A.</u>		<u>Total</u>
	<u>Indirect H.</u>	<u>Direct H.</u>	<u>Indirect H.</u>	<u>Direct H.</u>	
20 to 40yrs	84	16	200	25	325 (27.1%)
40 to 60yrs	190	70	251	80	591 (49.3%)
>60yrs	38	40	150	56	284 (23.6%)
Total	312 (26.0%)	126 (10.5%)	601 (50.1%)	161 (13.4%)	1200
Overall	438 (36.5%)		762 (63.5%)		
Primary	435		712		1147
Recurrent	3		50		53

two female patients in LA group and twenty-six in SA group.

Chart #1: Age-Wise Distribution of Patients

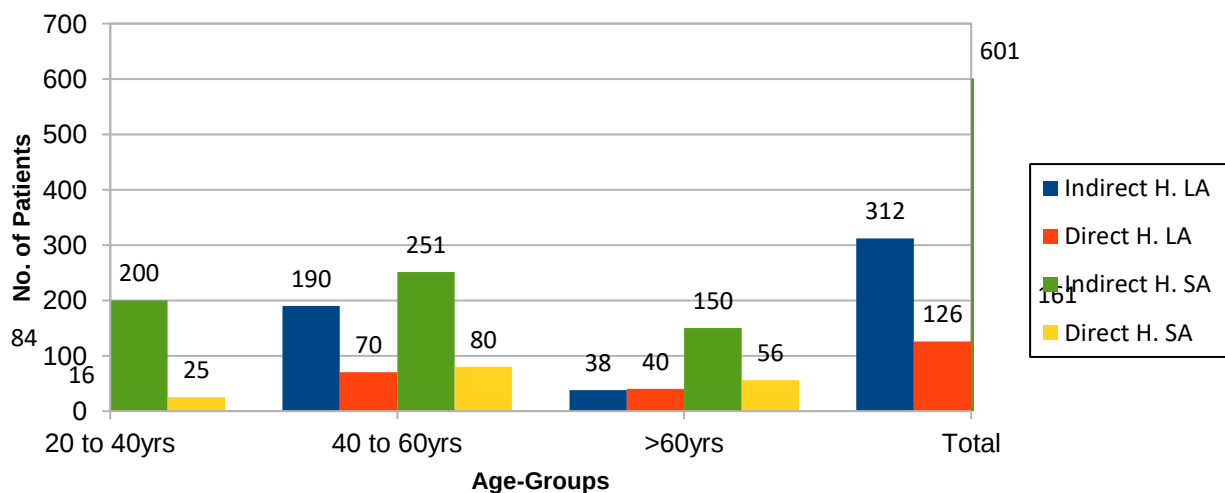


Table #2 :Complications &Outcomes.

<u>Complications</u>	<u>LA (n=438)</u>	<u>SA (n=762)</u>	<u>Total (N=1200)</u>
Urinary Retention	35 (7.9%)	Nil* (0%)	35 (7.9%)
Pyrexia	11 (2.5%)	19 (2.5%)	30 (2.5%)
PONV/Headaches	10 (2.3%)	50 (6.6%)	60 (5.0%)
Scrotal Edema / Post-OP Hydrocele	5 (1.1%)	16 (2.1%)	21 (1.75%)
Hematoma	2 (0.5%)	3 (0.4%)	5 (0.4%)
Wound Infection	10 (2.3%)	21 (2.7%)	31 (2.6%)
Seroma	2 (0.5%)	5 (0.6%)	7 (0.6%)
Mesh Rejection Needing Removal	1 (0.2%)	1 (0.1%)	2 (0.2%)
Injury to UB/Testis/VD	0 (0%)	0 (0%)	0 (0%)
Chronic Pain / Paraesthesia	17 (3.9%)	31 (4.0%)	48 (4.0%)
Readmission After Discharge	0 (0%)	0 (0%)	0 (0%)
Recurrence	1 (0.2%)	3 (0.4%)	4 (0.3%)
<u>Total</u>	94 (21.46%)	149 (19.55%)	243 (20.25%)
Average Operating Times (minutes) per site	40 to 60 minutes range		-
Average Duration of Hospital Stay (Days); (Including Day of Surgery)	1.6	3.6	-

* Patients were foley-catheterised