

# Comparison of Inguinal Herniorrhaphy under Local and Spinal Anaesthesia

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## ABSTRACT

This was a randomized clinical trial of hernia repair in spinal vs local anesthesia carried in general surgery department Bahawal Victoria hospital Bahawalpur from March 2008 to September 2009. Patients of inguinal hernia were selected from surgical out patient department according to inclusion criteria. They were randomly assigned group A (to be operated under spinal anesthesia) and group B (to be operated under local anesthesia). In this study 100 patient were included. Most of the patients were of old aged in our study (above 48 years). Most of them were having right-sided direct inguinal hernias. Scrotal hematoma occurred (10 %) in group A and (18 %) in group B. Wound infection incidence in group A was (2%) and in group B was (5 %). wound hematoma occurred (1 %) in group A and (4%) In-group B No case of transient femoral nerve palsy was encountered in-group B. Spinal headache (4%), backache (10%) and urinary retention (16 %) were only recorded in-group A. One recurrence was seen in-group B. Complications were less in-group B, so we recommend local anesthesia for open primary inguinal hernia repairs in both direct and indirect variety in young as well as in old aged patients.

**Key words:** Inguinal Herniorrhaphy, Local anesthesia

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## INTRODUCTION

Inguinal hernia is a frequently encountered surgical problem. It is three times more common in males<sup>1</sup>. In the national health services of UK, it is the most common surgery executed<sup>2</sup>.

Shouldice and mesh repair (Lichen stein repair) are the world wide accepted technique for inguinal herniorrhaphy. Relatively newer technique is laproscopic mesh repair. Open mesh repair has low recurrence rate and is preferable over laproscopic mesh repair.<sup>3</sup> Shouldice is a popular technique practiced in teaching hospitals (36%) as compared to non-teaching (26%)<sup>4</sup>. It has the advantages of detection of secondary defects due to free dissection and also more satisfactory for the patients<sup>5</sup>. This procedure can be performed under general, Spinal, epidural and local anesthesia.

Local anesthesia with appropriate analgesia and sedation appears to be safe for most of the open inguinal hernia repairs as complication of other type of anesthesia may be avoided. Local anesthesia is cost effective, apparently safer, has less post operative cardiovascular complications, short anesthesia time and helpful in decreasing the surgical list load. The other beneficial aspect of local anesthesia is the independence of surgeons from anesthetist. In specialized centers like Mayo's clinic local anesthesia is used as a routine for open groin

surgery on day care basis.

On the other hand spinal anesthesia has advantages of full work up of the patient and comparatively low incidence of postoperative pain. While it has disadvantages of long hospital stay, postoperative cardiovascular and urinary complications and is more expensive. With Local Anesthesia; although anesthesia time is shorter but the mean duration of surgery may be prolonged<sup>9</sup>. Transient femoral nerve palsy is a recently recognized complication that can lead to delayed ambulation in a significant number of patients<sup>10</sup>. High wound infection and wound hematomas are other important sequele<sup>11</sup>.

In department of surgery of Bahawal Victoria Hospital (Bahawalpur) a study is being conducted which is teaching institute. The objective of this study is to compare the results of inguinal herniorrhaphy performed under local and spinal anesthesia.

## PATIENTS AND METHODS

This was a randomized clinical trial carried out at department of general surgery Bahawal Victoria hospital Bahawalpur from 02-03-2008 to 07-09-2009.

One hundred patients admitted to the surgical wards of Bahawal Victoria Hospital from surgical out doors with clinical diagnosis of inguinal hernia were selected for study. The adult male patients of Inguinal Hernia above the age of 18 years having unilateral hernia with no complications like irreducibility, obstruction or gangrene were included in the study.

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Patients having Hernia with above complication & patients having advanced cardiovascular, Uncontrolled Diabetes, hypertension and respiratory problems were also excluded from the study.

All these patients were seen in the surgical outdoors and clinical diagnosis of inguinal hernia was made by detailed history and clinical examination. Past histories explored for some significant etiological factor for inguinal hernia and for other chronic ailments such as diabetes etc. Patients were admitted in the respective surgical wards after the informed consent of the operation. Routine investigations advised for the general assessment of the patient's health and for smooth operative and post operative course.

All the entire patients were managed according to the standard and recommended protocols in the ward. Patients prepared for elective list after their informed consent about the type of anesthesia by randomized cards. 0.5%xylocaine with adrenaline 1:400,000 was used as local infiltration anesthesia for hernia repair in half number of subject's. The standard procedure of local infiltration anesthesia was followed as has been already mentioned in the review of literature portion. These patients were kept in-group B.

In fifty patients spinal anesthesia was used for inguinal hernia repair with the help of consultant anesthetist. They were placed in-group A. Local anesthetic such as lidocaine was injected in the recommended dose i.e.7mg/kg in the subarachnoid space.

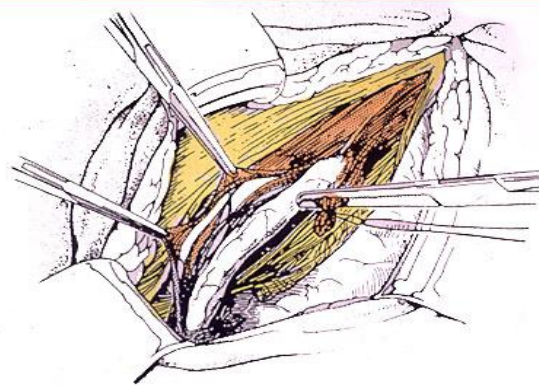
All contraindications for spinal anesthesia were ruled out before the procedure such as cardiac failure, spine deformities etc. In all the patients darnning repair was done. In indirect hernias mesh was formed, after the excision and ligation of hernial sac, between conjoint tendon and inguinal ligament with monofilament suture i.e. prolene. In case of direct hernias mesh was formed to reinforce the posterior abdominal wall after the reduction of hernial sac. All these repairs were performed by the consultants above the level of senior registrar to standardize the procedure.

They were followed first in the ward and then in the surgical out doors, after their discharge from the ward, for recording the complications of inguinal Herniorrhaphy. The whole information recorded on the predesigned Performa's. The data recorded on predesigned Performa's was analyzed by using the SPSS version 10. Tables were made for different variables such as age, type of hernia, type of anesthesia etc. The chi-square test applied as a test of significance and p value calculated for different variable.

## RESULTS

One hundred patients with primary inguinal hernia were included in the study. All of them were above 18 years. They were divided in to group A and group B, 50 patients each. In-group A 35 patients were having direct inguinal hernia and 15 having indirect variety. Moreover out of this group A 42 patients were having right-sided hernias and remaining 8 were having left sided. In group B 29 were having direct and 21 had indirect inguinal hernias, of these 50 patients of group B 36 were having right sided inguinal hernias and 14 were having left sided hernias. Group A patients were operated under spinal anesthesia and group B patients were operated under local anesthesia after their informed consent. The technique of hernia repair was mesh repair in both groups and was performed by consultants. Hospital stay was 3 days in-group A and was 24 hours in-group B, equal in both groups in those cases who recovered smoothly. Those patient who developed complications were kept for management for another few days in the ward, remaining were followed in the surgical out patient department for late complications. There was significant difference in complications in-group A and group B. Group A patients developed more postoperative complications such as urinary retention, post-spinal backache, hypotension, pain and delayed mobilization in the postoperative period (Table I). In-group B main complications were wound infection and wound hematoma, infection in all cases was confined to the suture track only. Some complications were encountered in both groups such as scrotal swelling, postoperative pain and recurrence. Because of lesser complication rate in-group B patients who were operated under local anesthesia as compared to group A patients, operated under spinal anesthesia local anesthesia was concluded to be a better option for open inguinal Herniorrhaphy in young adults as well as in old aged patients.

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Table 1: Complications of inguinal herniorrhaphy

Complication Observed	Group A (n=50)	Group B (n=50)	Total
Scrotal swelling	5(10%)	9(18%)	14(14%)
Urinary retention	8(16%)	1(2%)	9(9%)
Wound infection	2(4%)	5(10%)	7(7%)
Wound hematoma	1(2%)	4(8%)	5(5%)
Spinal headache	4(8%)	0	4(4%)
Backache	10 (20%)	0	10(10%)
Post operative pain	4(8%)	2(4%)	6 (6%)
Transient femoral nerve palsy	0	0	0
Hypotension	1(2%)	0	1(1%)
Recurrence	0	1(2%)	1(1%)

Group A=patients operated under spinal anesthesia  
 Group B=patients operated under local anesthesia  
 Calculated value  $\chi^2=22.198$ , Table value=16.916 at 9d.f.

Table 2: Type of inguinal hernias

Type	Group A	Group B	Total
Direct inguinal hernia	35(70%)	29(58%)	64(64%)
Indirect inguinal hernia	15(30%)	21(42%)	36(36%)
Total	50	50	100

**DISCUSSION**

Inguinal hernia is the most common and oldest surgical problem in the world. The peak incidence is 40-50 years of age, the mean age of the patients included in our study was between 38- 48 years (44%). Eight percent of inguinal hernias are also encountered in females but in our inclusion criteria all the 100 patients were males. Inguinal hernia was more common on the right side (>70%), which is in comparison with other studies in Pakistan. Hernia is a disease of labour class as most of our patients were manual workers (67%) in comparison to (56%)as many different local studies have proved.

The fundamental defect in inguinal hernias is in the anterior abdominal wall e.g., deficiency in transversalis fascia. All repairs include strengthening of this layer. However the final outcome of inguinal hernia repairs depends on the type of repair, experiences and skills of the surgeons and type of anesthesia used.

All the patients included in our study were above 18 years of age .we used local anesthesia in half of these patients. We did not include patients of less than 10 years in our study. But others have reported the use of local anesthesia for hernia repair even at one-year age<sup>6</sup>.

Mesh repair was done for repair of all these inguinal hernias in-group A and group B. Scrotal swelling was encountered in both group A and B. five

patient developed it in group A out of 50(10%) and 9 patients out of 50 (18%)in group B. The ratio mentioned in literature is 10-12%. This swelling is mostly due to collection of blood, temporary obstruction of venous flow and lymphatic flow at deep inguinal ring. The ratio in our study is also comparable to 11.8%incidence in another local study in Rawalpindi. However according to literature higher incidence is mentioned in shouldice repair, so concluded that it's mainly the type of repair that is responsible, not the type of anesthesia.

Wound infection in-group A patients was (4%) and in-group B patients (10%). The higher incidence of wound infection in local anesthesia in our study is supported by the other local studies. The incidence of superficial infection is comparable to international reports.<sup>7</sup>

Incidence of wound hematoma was (1%) in-group A and (4%) in-group B in our study. Its frequent occurrence in inguinal herniorrhaphies under local anesthesia is also evident by certain randomized trials on hernia repairs in local anesthesia<sup>8</sup>.

Transient femoral nerve palsy (transient quadriceps weakness) has been reported by international literature in hernia repairs under local anesthesia, but we have not encountered this complication in our study in-group B<sup>9</sup>.

Postoperative pain in the early postoperative period was (8%) in-group A and (2%) in-group B. Its intensity was recorded on visual analogue score. In-group B patients who were operated under local anesthesia there was less postoperative analgesia requirement in early post operative period in our study (oral analgesics e.g.diclofenac etc were enough), similar reports were published in an Indian study<sup>10</sup>. While group A patients required injectable analgesics for first 24 hours. Less analgesia requirement in patients operated under local anesthesia is also mentioned n international studies.

Incidence of postoperative Urinary retention in our study was (10%) in-group A and was (2%) in-group B. This complication was particularly encountered in patients who were operated under spinal anesthesia in our study. The patients who developed this complication in-group B were having symptoms of prostatism already so not referred to local anesthesia. These results were similar to other relevant reports<sup>11,12</sup>.

Spinal headache (4%), post spinal backache (10%) and hypotension (2%) were only encountered in-group A patients in our study. The results were comparable to the other studies.

Recurrence was encountered in only one patient (2%) in-group B. However in this complication type of hernial repair is a major concern as compare to type

of anesthesia. This issue is supported by other studies<sup>13</sup>.

## CONCLUSION

Primary inguinal hernia is a common occurrence in old age. Incidence is mostly on right side. It is concluded that local anesthesia is a better option for inguinal hernia repairs as compare to spinal anesthesia with respect to postoperative complications and patients comfort in young as well as in old age patients. Local anesthesia is recommended in open inguinal hernia repairs; in both direct and indirect varieties because of less postoperative complications.<sup>4,14,15</sup>

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