

## Comparitive Study of Lichtenstein Hernia Repair under Local Anaesthesia and Spinal Anaesthesia

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### Abstract

**AIM :** To compare safety and effectiveness of lichtenstein repair under local anaesthesia versus spinal anaesthesia in relation with post operative pain , complications and hospital stay

**MATERIALS AND METHODS:** This propective study of 50 cases of unilateral inguinal hernia admitted in Government Mohan Kumaramangalam Medical College Hospital , Salem was done in the period from DECEMBER 2015 to SEPTEMBER 2017. The cases were evaluated through proper history taking , clinical examination, operative procedure and post operative follow ups.

**OBSERVATION:** In our study the mean age in group A was 44.36+/-11.69 and in group B was 40.44+/-10.18. Incidence of indirect inguinal hernia was common in age group of 21 to 45 years in group A and 22 to 7 years in group B. Direct hernia incidence was common in age group 47 to 71 years in group A and 39 to 67 in group B. The time taken for hernioplasty under local anaesthesia was from 30 mins to 60 mins but to finish under spinal anaesthesia was prolonged from 30 mins to 90 mins. Hence local anaesthesia was a better choice. The pain felt during surgery was significantly less in group A when compared to group B. Postop pain was measured using the visual analogue scale at 12 hrs , 24 hrs and 48 hrs. Mean pain was significantly less in group A as compared to group B. Post operative complication were high in group B when compared to group A. Patients had complications like urinary retention , headache , wound hematoma. Spinal anesthesia related complications were high. The number of analgesic doses received postoperatively was more in group A was very less compared to group B. Around 8 patients in group B received 5 to 6 analgesic doses postoperatively. Mean analgesic dose received in group A patients (2.12+/-1.23) as compared to group B patients ((3.44+/-1.58) Number of days of hospital stay was significantly less in group A when compared to group B. 19 patients in group B had to stay 3 to 5 days in the hospital whereas in group A most of the patients were discharged on day 1 or 2. Group A patients were cost effective than group B when the drugs used, number of analgesic doses used and number of days of hospital stay are considered.

**CONCLUSION:** Lichtenstein tension free hernioplasty under local anaesthesia is an extremely safe day care operation . It is inexpensive and effective procedure and the benefits are low morbidity , low recurrence rate and early return to normal activities. It results in faster recovery speedy discharge and less anaesthesia related complications.

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### I. Introduction

HERNIA is defined as an abnormal protrusion of the part or whole of a viscus through the wall of its containing cavity. Elective inguinal hernia repair is the most commonly performed

operation in general surgery. Patient safety and provision of optimum operating condition are the main criteria for the choice of anaesthetic technique. Inguinal hernia repair can be performed by using a variety of anaesthetic techniques such as general anaesthesia, regional anaesthesia in the form of spinal or epidural anaesthesia, paravertebral block and local anaesthesia. General and regional anaesthesia cause hemodynamic changes during induction and maintenance. However in developing countries like India, general anaesthesia and regional anaesthesia are commonly used. Local anaesthesia has been found to be the best anaesthesia for inguinal hernia repair. Studies comparing the recovery period of local, general and regional anaesthesia have shown that local anaesthesia is ideal for day care surgery. Local anaesthesia provides increased safety for patients, better post operative pain control and shorter recovery period, reduced duration of hospital stay and reduced cost hence local anaesthesia is acceptable and safe technique for inguinal hernia surgery.

### **AIMS AND OBJECTIVES**

To study the efficacy of Lichtenstein's hernioplasty under local anaesthesia compared to spinal anaesthesia.

### **OBJECTIVE OF THE STUDY**

To compare safety and effectiveness of Lichtenstein repair under local anaesthesia versus spinal anaesthesia in relation with post operative pain, complications and hospital stay

### **SOURCES OF DATA**

This prospective study was conducted in Mohan Kumaramanagalam Medical College Hospital Salem for a period of two years from DECEMBER 2015 to SEPTEMBER 2017

### **METHODS AND COLLECTION OF DATA**

This study includes 50 cases of inguinal hernia. After admission detailed history was taken and thorough clinical examination was done. Patients were divided randomly into two groups of 25 each named Group A and Group B. Patients in group A were subjected to inguinal hernia mesh (Lichtenstein's) repair under local anaesthesia and patients in group B were subjected to inguinal hernia mesh (Lichtenstein's) repair under spinal anaesthesia.

### **STUDY DESIGN**

Prospective study

### **STUDY PERIOD**

DECEMBER 2015 to SEPTEMBER 2017

### **PLACE OF STUDY**

Govt Mohan Kumaramangalam Medical College Hospital, Salem

### **SAMPLE SIZE**

50 cases

### **INCLUSION CRITERIA**

- Patients with primary uncomplicated inguinal hernia
- Patients aged above 20 years
- Patients with unilateral hernia

### **EXCLUSION CRITERIA**

- Patients with recurrent hernia
- Patients below 20 years
- Patients with bilateral hernia , femoral hernia
- Patients with complicated hernias like – irreducibility , obstruction , strangulation , incarceration
- Patients with preoperative chronic pain problems

### **SURGICAL TECHNIQUE**

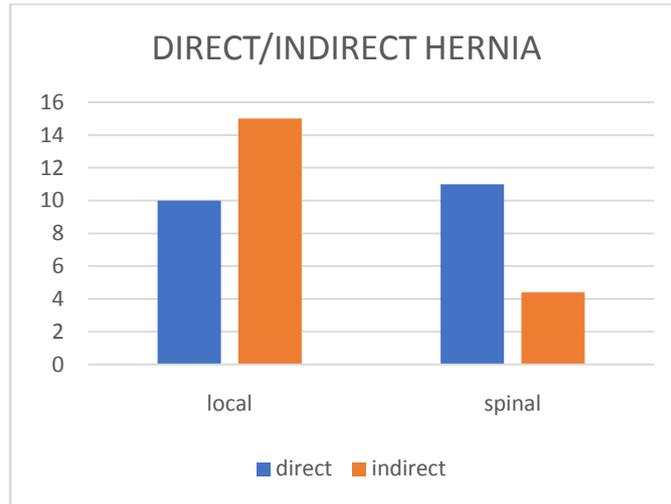
In group A patients , anaesthetic solution was consist of 50:50 mixture of 1% xylocaine and 0.5% bupivacaine with 1:2,00,000 epinephrine. Anaesthetic mixture was injected 2.5 cm from iliac crest along the line joining anterior superior iliac spine to umbilicus. The needle was then passed through this to strike the inner surface of ilium just below the crest. 10ml of solution was injected. The injection was repeated with needle reinserted at a slightly steeper angle and 5ml of solution was injected. Second point of block was 2cm above the mid inguinal point. The needle was inserted perpendicularly until it pierced the external oblique aponeurosis. 10ml of solution was injected at this level and 5ml as the needle was withdrawn over 2cm. Next solution was injected over pubic tubercle subperiosteal injection of 3cc of solution was made. Femoral nerve was blocked just below the inguinal ligament. The block was completed by a subcutaneous infiltration along the line of surgical incision and 10ml of solution was deposited. Then it was infiltrated once deep ring was identified. In group B regional anaesthesia in the form of spinal was given using 0.5% bupivacaine. Using 26 gauge spinal needle in L3-L4 interspace 2.5cc of 0.5% bupivacaine was injected in subarachnoid space after getting free flow of cerebrospinal fluid. In case of inadequate or no effect local or spinal anaesthesia was converted into general anaesthesia and patient was not included in the study. Tension free hernioplasty was done in both the groups. polypropylene prosthetic mesh of 15x7.5cm was used. Following observations were made :- any pain during surgery done under local, postoperative pain , pain at incision site, urinary retention , wound hematoma , sepsis , headache , testicular pain/swelling. follow up was done at 3<sup>rd</sup> postoperative day and during follow up patient looked for wound sepsis , pain at incision site and other complications. all the data was analysed statistically between two groups.

### **POST OPERATIVE EVENTS**

Patient was shifted to the ward and analgesics and antibiotics given. Oral fluids were initiated after 8 hours of surgery incase of spinal anaesthesia and after two hours of surgery in local anaesthesia. If patients were hemodynamically stable and clinically normal they were discharged on the first post operative those who underwent surgery under local anaesthesia. Patients were asked to review immediately if symptomatic or after one week. They were followed up regularly.

## **II. Observation And Results**

The youngest patient in the group A was 21 years old and in group B was 22 years old. The oldest patient in group A was 71 years old and in group B was 67 years old. The mean age was 44.36+/- 11.69 in group A and in group B was 40.44+/-10.18.



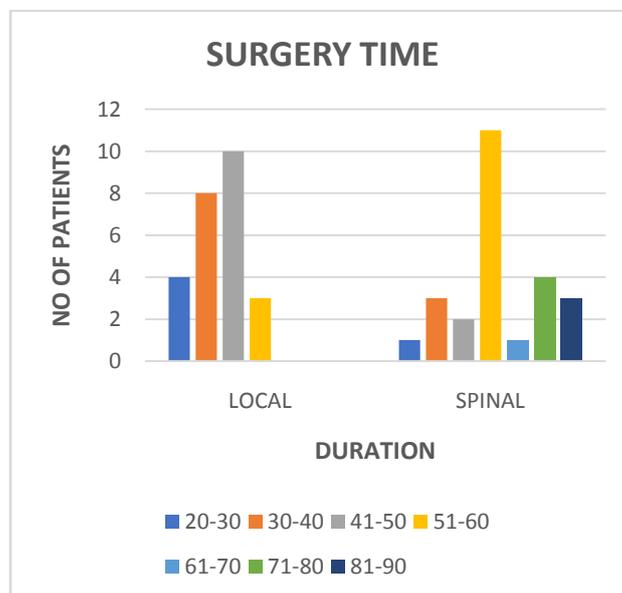
**Incidence of direct and indirect hernia**

The incidence of indirect inguinal hernia was high compared to direct hernia in both the groups. In group A 15 ( 60%) patients had indirect inguinal hernia and 10 (40%) patients had direct hernia.n group B 14 (56%) patients had indirect inguinal hernia and 11(44%)patients had direct inguinal hernia.Incidence of indirect inguinal hernia was common in the age group of 21 to 45 years in group A and 22 to 47 years in group B. Direct hernia incidence was common in the age group of 47 to 71 years in group A and 39 to 67 in group B.

Incidence of right sided inguinal hernia was 18(72%) patients in group A and 16(64%) patients in group B.Around 7(28%) patients had left sided inguinal hernia in group A and 9(36%) patients in group B.

**Time taken for surgery**

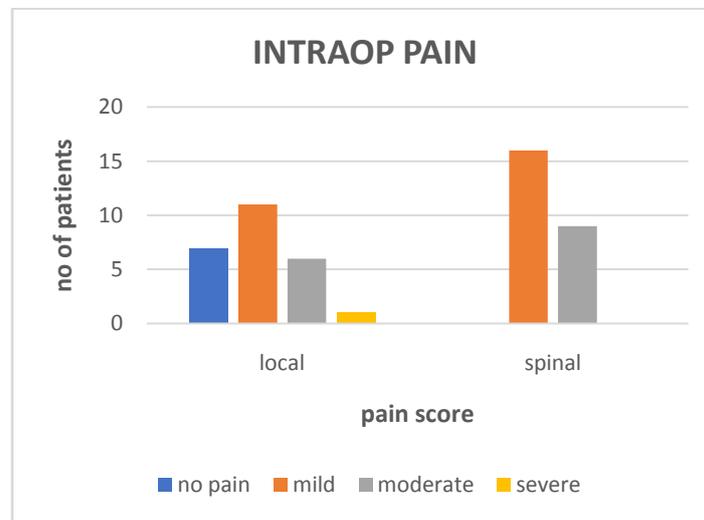
The time taken to finish hernioplasty under local anaesthesia was from 30 mins to 60 mins. But the time taken to finish under spinal anaesthesia was prolonged ranging from 30 mins to 90 mins.The taken for the spinal anaesthesia was significantly prolonged. Hence local anaesthesia was a better choice..(p value < 0.05).



**Pain during surgery**

Pain was calculated during the surgery and 11 patients(44 %) had mild pain in group A and 16 patients(64%) in group B. 7 patients(28%) in group A had no pain. 6 patients (24%) in group A had moderate pain whereas 9 patients (36 %) in group B had moderate pain.Severe pain was felt by 1 patient (4%) in group A.Pain nwas significantly less in group A patients when compared to group B.(p value <0.05)

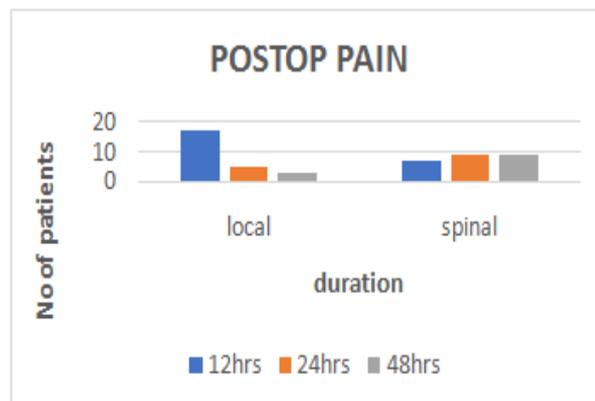
**Intraop pain**



Intra op pain was seen more among the patients who received spinal anaesthesia though severe pain was seen only in one patients who received local anaesthesia.Post operative pain was recorded at 12hours and 48 hours after operation by using visual analogue scale(VAS) pain scoring system in TABLE 3.

**(visual analogue score)postoperative pain score**

Visual analogue scale was used to assess the post operative pain in both the groups. Mean pain was significantly less in group A as compared to group B.(p value <0.05)

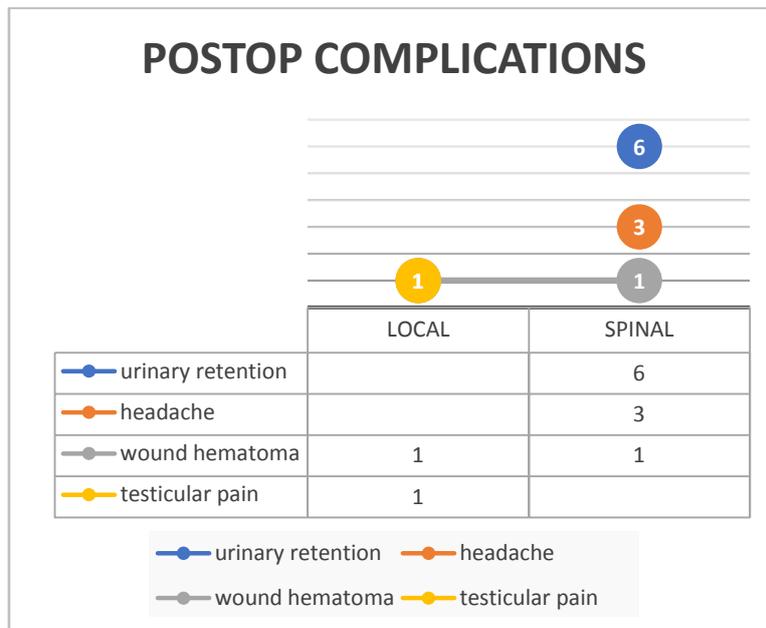


**Post op pain score**

Post op pain score at 24hrs and 48hrs was more among the patients who received spinal anaesthesia.Post op pain was significantly less in group A when compared to group B.

**incidence of post operative complications**

Post op complications were significantly less in group A compared to group B. (p value < 0.05).

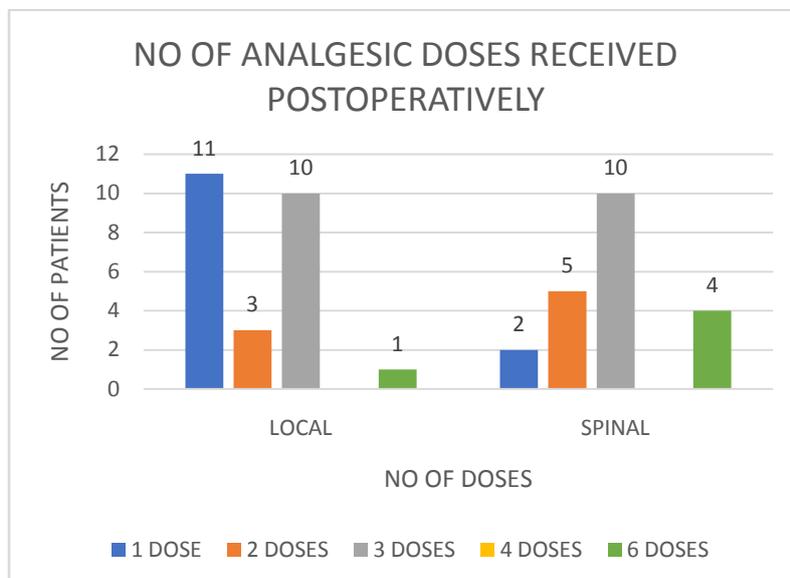


**Post op complications**

Post op complications like urinary retention and post spinal headache was seen more among patients who received spinal anaesthesia. Patients who received local anaesthesia had much less complications compared to spinal

**Number of analgesic doses received postoperatively**

Mean analgesic dose received was statistically significantly less in group A patients (2.12+/-1.23) as compared to group B patients (3.44+/-1.58)(P value < 0.05)

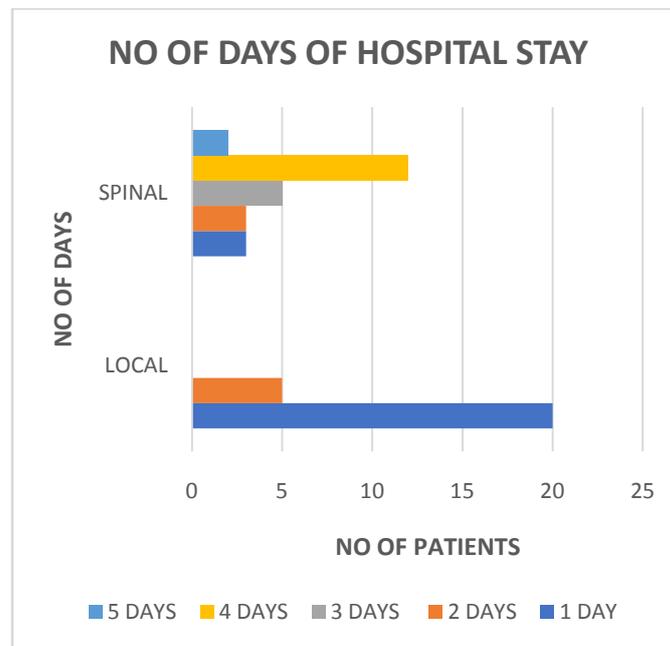


**No of analgesic doses received postoperatively**

Group A patients received less no of analgesic doses compared to group B patients.

### No of days of stay in hospital

The number of days of hospital stay was significantly less in group A when compared to group B . (p value < 0.05) .



### No of days of hospital stay

Patients in group A were discharged on the 2<sup>nd</sup> post operative day whereas patients in group B were discharged on the 4<sup>th</sup> and 5<sup>th</sup> post operative day. No of days of hospital stay among group A patients was significantly less.

### III. Discussion

I have studied 50 patients and among them the youngest patient who underwent hernioplasty under local anaesthesia was 21 years old and oldest was 71 years old. Among the patients who underwent under spinal anaesthesia youngest was 22 years old and the oldest was 67 years old. The mean age was 44.36 in group A and 40.44 in group B. In both the groups the incidence of indirect inguinal hernia was high. In group A 15 patients had indirect inguinal hernia and 10 patients had direct inguinal hernia. In group B 14 patients had indirect inguinal hernia and 11 patients had direct inguinal hernia. The incidence of indirect inguinal hernia was common in the age group of 21 to 45 years in group A and 22 to 47 years in group B. Direct hernia was seen in the age group of 47 to 71 years in group A and 39 to 67 years in group B. Direct hernia was common among the older age group as per the study. Around 7 patients in group A had left sided hernia and 9 patients in group B had left sided hernia. Therefore right sided hernia was more common among the study groups. The time taken to complete hernioplasty in group A was 20 – 30 mins in 4 patients , 31- 40 mins in 9 patients , 41- 50 mins in 9 patients and 51 – 60 mins in 3 patients. Majority of patients surgery was completed with 30 to 50 mins. Whereas in group B it took 20 -30 mins in 1 patient , 31 – 40 mins in 3 patients , 41 – 50 mins in 2 patients , 51 – 60 mins in 11 patients , 61 – 70 mins in 1 patient , 71 – 80 mins in 4 patients and 81 – 90 mins in 3 patients. About 32% of patients in group B the surgery time was prolonged ranging from 60 to 90 mins.

Hence the surgery time was significantly prolonged in patients who underwent hernioplasty under spinal anaesthesia when compared to local anaesthesia.(p value <0.05). Hence local

anaesthesia was better compared to spinal anaesthesia when the time taken for surgery is considered. In group A around 7 patients had no pain, 11 patients had mild pain, 6 patients had moderate pain and 1 had severe pain whereas in group B 16 patients had mild pain and 9 patients had moderate pain. None of the patients in group B had severe pain. Hence the pain felt during surgery was significantly less in group A compared to group B. ( $p$  value  $< 0.05$ ) Therefore local anaesthesia is better anaesthesia in the modern day practise. Post operative pain in these patients were assessed based on the Visual Analogue Scale. Here in our study pain was assessed from (1-10) at 12 hours, 24 hours, 48 hours. The mean at 12 hrs, 24 hrs and 48 hrs in group A was found to be  $2.80 \pm 0.70$ ,  $2.00 \pm 0.70$ ,  $0.20 \pm 0.40$  whereas in case of group B the mean at 12 hrs, 24 hrs and 48 hrs was  $3.48 \pm 0.87$ ,  $2.88 \pm 0.92$ ,  $2.08 \pm 0.95$  respectively. Here in our study the post operative pain in the group A was significantly less when compared to group B. ( $p$  value  $< 0.05$ ). Mesh infection was not seen in any of the patients and recurrence was also not seen in any patient as proper surgical technique does reduce the chances of recurrence. Among group A 1 patient had wound hematoma post operatively and another 1 had testicular pain whereas in group B 1 patient had wound hematoma, 6 patients (24%) had urinary retention and 3 patients (12%) had headache. Patients who had urinary retention was relieved by catheterisation in four patients. Hence post operative complications were significantly less in group A when compared to group B ( $p$  value  $< 0.05$ )

The number of analgesic doses received postoperatively was compared between both the groups in the study. In group A 11 patients (44%) received one analgesic dose, 3 patients (12%) received two analgesic doses post operatively and 10 patients (40%) received three analgesic doses and 1 patient (4%) received six doses post operatively. But in group B 2 patients (8%) received one analgesic dose, 5 patients (20%) received two analgesic doses, 10 patients (40%) received three analgesic doses, 4 patients (16%) received five analgesic doses and another 4 patients (16%) received six analgesic doses postoperatively. Therefore the mean analgesic dose received was statistically significantly less in group A ( $2.12 \pm 1.23$ ) when compared to group B ( $3.44 \pm 1.58$ ) with ( $p$  value  $< 0.05$ ). The post operative analgesic dose required was less as the local anaesthesia given during the surgery had long postoperative analgesic effect.

The number of days of hospital stay was compared in both the groups and among the patients who underwent hernioplasty under local anaesthesia 20 patients

(80%) were discharged in 24 hours and another 5 patients (20%) in 48 hours. The 20 patients in group A had no complications and had no pain after 24 hours and hence discharged. On follow up the post operative period was uneventful and wound was healthy and there was no recurrence. Whereas in group B 3 patients (12%) were discharged on day 1, another 3 patients (12%) on day 2, 5 patients (20%) on day 3, 12 patients (48%) on day 4 and 2 patients (8%) on day 5. So group B patients had to stay for a longer time in the hospital. This was related to the complication related to spinal anaesthesia which delayed the time of discharge in these patients. Urinary retention and headache seen in group B patients attributed to the longer stay in the hospital and the post operative pain which was more in group B led to the delayed time of discharge. So the number of days of stay in hospital was significantly less in patients who received local anaesthesia.

When cost effectiveness of the procedure was considered the patients in group A had less complication, less analgesic doses required, local anaesthesia was used during the surgery, less number of days of stay in hospital.

#### **IV. Conclusion**

The Lichtensteins hernioplasty done under local anaesthesia is a new advent among the hernia repairs done nowadays. When done under local anaesthesia the morbidity is less and it is considered as a safe day care procedure in both young and adult patients. Hernioplasty done under

local anaesthesia has a speedier recovery , less pain and low recurrences.The anaesthesia related complications are much less when compared to spinal anaesthesia.Therefore Lichtensteins hernioplasty under local anaesthesia is gaining immense attention currently among the groin hernia repairs.

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