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Outcome Of Repair Of Inguinal Hernia In Adult : Comparison Between General Versus Local Anesthesia

Azhar Mohammed Younis[1], Ali Jumaah Ali[2] and Mohammed Hasan Mohammed[3]

[1-3]Aljumhoory Teaching Hospital, Al-Mousil, Iraq.

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Corresponding author:
Azhar Mohammed Younis
Email: marchbon73@gmail.com
Aljumhoory Teaching Hospital
Al-Mousil
Iraq

ABSTRACT

Objectives: Inguinal hernia repair is a common surgical procedure can be performed under general, Local, depending on personal, medical, economic factors, choosing anesthesia is reflected on expenses and postoperative morbidity, so the technique must be easy to perform and practice that achieve patient satisfaction with low recurrence rate and complication.

Methods: Our study composed of 60 patient, all patient of the study were male, divided into two groups, each with 30 patient according to type of anesthesia, group A repair under general anesthesia (GA), group B repair under local anesthesia (LA), after taking singed consent formed, age of patient for general anesthesia ranged from 45-70 years ,compared to (20- 70) years for local anesthesia group.

Results: A total of 60 patients had inguinal hernia repair in this study, the right inguinal hernia was 80% present (48 patients), and 20% was left inguinal hernia (12 cases), present for direct inguinal hernia was 53.3% (16 cases of study), for indirect hernia 26.6%(8 cases of study) and 20%percent (6cases) for both direct and in direct hernia, Mean of age for general anesthesia group patients was 44.73 with median age 45, while for local anesthesia group mean age was 66.07 with median 66, mean-time of surgery for patients under local anesthesia equal to 45.92. It was lower significantly compared to 48.45 for the general anesthesia group. All patients of inguinal hernia with local anesthesia group were discharged home on the same operative day; four general anesthesia group patients were discharged on the first postoperative day. Regarding postoperative surgical complications more in general anesthesia than local (postoperative nausea, vomiting, cough, headache, retention of urine, respiratory and cardiovascular).

Conclusion: The use of local anesthesia in inguinal hernia repair safe, cost-effective, with less hospital stay, less postoperative respiratory and cardiovascular complications compared to general anesthesia, mainly in a patient with an underlying cardiopulmonary disease that is affected by general anesthesia, addition to the shorter time of surgery. And they are reducing surgical waiting list.

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INTRODUCTION

An abdominal hernia is a protrusion of an organ or part of its content from the abdominal cavity through a normal or abnormal aperture or from wall weakness[1] inguinal hernia repair is one of the most commonly performed operations worldwide.[2] Approximately 75% of abdominal wall hernias occur in the groin. Of inguinal hernia repairs, 90% are performed in men, and 10% are performed in women. Globally, inguinal hernia repair has become one of the most important procedures in improving quality of life and preventing disability.[3] Improved surgical techniques significantly improve the outcomes for many patients.[4] The inguinal canal is an approximately 4 to 6 cm long cone-shaped region situated in the anterior portion of the pelvic basin. The canal begins on the posterior abdominal wall, where the spermatic cord passes through a hiatus in the transversalis fascia also known as the deep (internal) inguinal ring.

The boundaries of the inguinal canal are the external oblique aponeurosis anteriorly, the internal oblique muscle laterally, the transversal fascia and transverses abdominis muscle posteriorly, the internal oblique and transverse abdominis muscle superiorly, and the inguinal (Poupart's) ligament inferiorly. The spermatic cord traverses the inguinal canal, and it contains three arteries, three veins, two nerves, the pampiniform venous plexus, and vas deferens. It is enveloped in three layers of spermatic fascia.[3]

Several retrospectives and randomized controlled trials have shown that local anesthesia provides the best clinical and economic benefits to patients.[5,6] Local anesthesia with suitable analgesia and sedation are safer, cheap with less postoperative respiratory and cardiovascular complications with short anesthesia time, and helpful in reducing the surgical waiting list.

Some complications may also be related to general anesthesia, such as postoperative nausea, vomiting, cough, headache, and urinary retention, which prolongs hospital stay. On the other hand, the application of local anesthesia may be discomforting, which directly reflects on patient satisfaction.

Surgical and Anesthetic Technique: The local anesthesia which was used is a mixture of 2% lignocaine 15 to 35 milliliters and 0.9 saline 20 to 40 milliliters, (maximum dose: 4.5mg\kg upto 300 mg without epinephrine; or 7 mg\kg upto 500mg with epinephrine, local infiltration and nerve block used.

First, 10-15 mL of the local anesthetic mixture was infiltrated in the line of planned incision, then 5 mL were injected at the surface anatomical markings of both the superficial and deep inguinal orifices to anesthetize the inguinal canal. Local anesthetic infiltration was also injected around the pubic tubercle, local anesthetic mixture was also infiltrated before dissection of the preperitoneal space and according to the patient's need.

Risk factors: The risk factors for an inguinal hernia include: family history, previous contra-lateral hernia, male gender, age, abnormal collagen prostatectomy, and low body mass index.[7]

Inclusion criteria for LA patient :

- Age 18 to 70 years
- Male
- Any weight
- ASA3 & 4

Exclusion criteria for LA patient :

- Patients with who refuse local anesthesia injection.
- allergy to lidocaine.
- Bilateral inguinal hernia.

MATERIALS AND METHODS

The study was conducted as a prospective cohort study at AL Mosul medical center from 1 August 2019 to 1 July 2020.

Our study was included 60 patient divided into two groups according to the type of anesthesia which is used during the operation. Group A included 30 patients general anesthesia was used while group B repaired under local anesthesia; all patients of the local anesthesia group had cardiopulmonary risks.

Each patient is informed about the type of anesthesia and accepts the method of anesthesia. A full history was taken, and a detailed clinical examination was done; in local anesthesia, hypotension was reported in one patient; on the other hand, one patient of the general anesthesia group had SVT during surgery that mandate admission to ICU postoperative.

The early complications including pain, retention of urine, hematoma, wound infection. Time of surgery calculated from incision to last stitch skin. The postoperative pain represents the need for analgesia postoperatively. Data were collected statistical analysis was performed using the software package SPSS version 24.0 (SPSS Inc., Chicago, ILL). A p-value < 0.5 was considered statistically significant.

In all patients, a standard inguinal incision was given. The type of hernia was confirmed after delivering the sac. The modified bassine and proline mesh was used to repair. A suction drain was used and removed 24¬48 hour postoperative. All patients were discharged on the same operative day, and the first visit was arranged on 7th postoperative day.

RESULTS

Sixty patient included in this study as a part of Cochrane Collaboration study divided into two groups, group A patient repaired under general anesthesia had 30 patients, group B included 30 patient repair under local anesthesia. Right inguinal hernia was 80% present (48 patients) and 20% was left inguinal hernia (12 patients), percent was for direct inguinal hernia 53.33% (32 cases of study) , for indirect hernia 26.66% (16 cases of study) and 20% percent (12cases) for both direct and in direct hernia all cases were male, mean of age for general anesthesia group patients was 44.73 with median age 45, while for local anesthesia group mean age was 66.07 with median 66, mean-time of surgery for patients under local anesthesia equal to 45:54 minute it was lower significantly compared to 48:45 minute for general anesthesia group, all patients of inguinal hernia with local anesthesia group discharged home as a day case at the same day, four patients of general anesthesia

group discharged in day one postoperative. Regarding surgical complications (wound infection, urinary retention, scrotal swelling, groin pain, paraesthesia and numbness, hematoma) there was no statically significant difference between local and general anesthesia groups in this study.

Age for GA ranged from 20 to 70 years, mean 44.73 with median age 45, while for LA group ages ranged from(55 to75) years mean was 66.07 with median 66 as showed in Table 1.

Mean-time of surgery for patient under local anesthesia equal to 45.92 it was lower significantly compared to 48.45 for the general anesthesia group (Table 2).

Infection occur in 2 patient (6.66.%) in general anesthesia compared to 1 patient (13.33%) of local anesthesia group ,urinary retention occur in 4 cases (13.33%) of general anesthesia and 2 patient (6.66%) of local anesthesia group ,swelling complication present in 6 cases (20%) of general anesthesia group and 4 cases (13.33%) of local anesthesia group patient ,groin pain occur in 1pationt of general anesthesia (6.66%) in compared to 4 cases (13.33) of local anesthesia group ,paraesthesia and numbness occur 4 patient (13.33%) compared to 2 patient of local anesthesia group, regarding to hematoma occur in 1patient of general anesthesia group compared to 1 case (6.66%) of local anesthesia group Table 3, regarding time of surgery it ranged from 40-50 minutes for general anesthesia patient and 35 – 40 minute for local anesthesia group patient with SD equal to 0.82 for general anesthesia group, local anesthesia group patient with mean equal to 48.54 for general anesthesia group and 45.93 for local anesthesia group patient one patient admitted to intensive care unit for cardiac complication during hernia repair under general anesthesia.

Table 1. **The ages of patient in study.**

Ages Anesthesia	Case Summaries				
	N	Mean	Median	Min.	Max.
Age (GA)	30	44.73	45	20	70
Age (LA)	30	66.07	66	55	75

Table 2. **Time of operation local anesthesia and general anesthesia complications**

Mean of Surgery (Mint)	Mean		Std. deviation		T test
	GA	LA	GA	LA	P value
	48.45	45.92	0.82	0.56	0.000

Table 3. **Postoperative complications for general anesthesia & local anesthesia.**

Anesthesia Complication		Type		Fishers exact test P-value
		GA	LA	
		No. 30	No. 30	
Infection	Count	2		1.00
	%	6.66%	13.33%	
Urinary retention	Count	2	1	1.00
	%	13.33%	6.66%	
Scrotal Swelling	Count	3	2	1.00
	%	20%	13.33%	
Groin Pain	Count	1	2	1.00
		6.66%	13.33%	
Paresthesia& oneness	Count	2	1	1.00
	%	13.33%	6.66%	
Hematoma	Count	0	1	1.00
	%	0%	6.66%	

DISCUSSION

Inguinal hernia a common surgical procedure worldwide as its common surgical problem.[8-10] It has higher incidence in male than in female-male and Men presenting with inguinal hernia often have minimal symptoms, in female may have wide variety of presentation.[10,11]

Aims of hernia repair include reduction of the contents, repair of the fascial defect, and restoration of normal abdominal wall hernia repair procedures include: fascial repair, tension-free prosthetic repair, and open preperitoneal mesh repair for recurrent inguinal hernia.[12] However tissue repair methods like Bassini's have the advantage of being simple and cost-effective,[13] majority of our patient was above 60 years of study and 63% (34 patients) and with advancing on age chronic medical illnesses became more common than young age group whoever, elderly patients cannot be considered as an utter risk for surgical treatment of inguinal hernia.[14] Local anesthesia is safer for patients with respiratory, cardiovascular disturbances and patients with comorbidity associated with general anesthesia.[15] There was also a lower incidence of side effects, such as cardiovascular instability, nausea, vomiting, with rapid mobilization after surgery, resulting in a shorter hospital stay as agreed with de SaRibeiro, F.A. study.[16] On the other hand use of local anesthesia have limitation include bilateral hernia child, obese incarcerated hernia and very anxious patient.[17] In addition, any successful surgery is to relieve pain restoration of normal anatomy, with reducing recurrent rate with minimal early and late complication as much as possible.[18] Regarding inguinal hernias, management has a major predominance with male to female ratio of [19] that agreed with our study when all cases were males.

All of the patient who underwent surgery under local anesthesia and the majority of a case with general anesthesia (all except four patients) discharge at the day of surgery that agreed with P SANJAY1, A Woodward study,[20] we note that patient under local anesthesia need less analgesia postoperatively compared to a patient with GA who need more analgesia that agreed with

Melek, study.[15] Besides that, ilioinguinal and iliohypogastric nerve block by local anesthesia can reduce the need for analgesic drug and hospitalization after surgery[21] that agreed with our study as we use nerve block with local infiltration method which can be used to control post-surgical pain which affects early mobilization and decrease hospital staying, regarding the time of surgery. It ranged from 40-50 minutes for GA patient and 35-40 minutes for LA group patient with SD equal to o.82 for GA group and 0.56 for GA group patient with a mean equal to 48.54 for GA group and 45.93 for LA group patient .so time of group LA was significantly lower

than GA group $p < 0.05$, that cause less time on theater that reflect on a waiting list, and hospital cost.[16] Regarding other operative complications LA group (urinary retention, swelling, paraesthesia, and numbness) compared to GA group has a lower percent, while it had a higher percentage of complications regarding (infection, groin pain, and hematoma) compared to GA but all difference had statically insignificant.

Our study as we use nerve block with local infiltration method, which can be used to control post-surgical pain which affects early mobilization and decrease hospital staying, regarding the time of surgery it ranged from 40-50 minutes for general anesthesia patient and 35-40 minutes for local anesthesia group patient with SD equal to 0.82 for general anesthesia group and 0.56 for general anesthesia group patient with mean equal to 48.54 for general anesthesia group and 45.93 for local anesthesia group patient. So the time of group local anesthesia was significantly lower than general anesthesia group $p < 0.05$, which cause less time on theater that reflect on Lessing waiting lest, and hospital cost.[14]

CONCLUSIONS

Local anesthesia safe easy to perform, cost effective, decreeing morbidity and mortality associated with general anesthesia in patient with medical comorbidity, decreasing hospital staying, decreasing waiting list and decrease need for postoperative analgesia.

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