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Research Article

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Risk Factor And Outcome Of Inguinal Hernia Repair Under Local Anesthesia Among Elderly Patients

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ABSTRACT

Background: Hernia is the "protrusion of the viscous or part of the viscous through an abnormal opening in the walls of its containing cavity". Inguinal hernias are the commonest of all hernias and adult inguinal herniorrhaphy accounts for 15% of operation in general surgery. Inguinal hernia is a common pathology seen during surgical practice. **Objective**: To find out risk factore and outcome of inguinal hernia repair under local anesthesia among elderly patients. **Methods**: In this prospective study was conducted in the Anesthesia Department, Sher-E-Bangla Medical College Hospital, Barishal, Bangladesh from January to December 2021. We enrolled 70 consecutive high risk elderly (age > 65 years) male patients who were admitted for repair of inguinal hernia outpatients' department. Associated co-morbid conditions were labeled. All the patients received treatment with prosthetic mesh repair under local anesthesia. The patients were evaluated for tolerability and outcome of local anesthesia. **Results**: In the present study age of the patient varied from 20 to 70 years with the highest prevalence noted in the age group of 31-40 years. The mean age was 78.2±9.64 years (range 65–93 years). Present study shows more than 97.2% are male with only 2.8% of female presenting with inguinal hernia. Direct hernia was present in all (100%) patients, while 16(16%) patients also had indirect hernia. Right sided hernias were present in 67(67%) patients, while left sided hernias were present in 37(37%) patients. There were 71(71%) patients who had incomplete inguinal hernia, while 29(29%) patients had complete inguinal hernia. The frequency and percentage of the associated co-morbid condition. The procedure was successfully completed in all patients. The mean operative time was 46.35+7.82 minutes. No intra operative or postoperative mortality was observed. The mean hospital stay of the patients was 1.02+0.57 days. Pain during procedure was seen in 3(4.2%) patients, while nausea/vomiting and headache in 1(1.4%) patient each. Postoperatively, pain was seen among 3(4.2%) patients, urinary retention in 1(1.4%), inguinodynia in 1(1.4%) patient, and scrotal hematoma in 2(2.8%) patients. **Conclusion**: Our experience shows that prosthetic repair for inguinal hernia among elderly patients who are high risk for general or spinal anesthesia is well tolerated and has favorable outcome. In future it may erase the wait and watch strategy in such patients.

Key Words: *Inguinal Hernia, High Risk Patients, Local Anesthesia*

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INTRODUCTION

Hernia is the "protrusion of the viscous or part of the viscous through an abnormal opening in the walls of its containing cavity". Inguinal hernias are the commonest of all hernias and adult inguinal herniorrhaphy accounts for 15% of operation in general surgery. Inguinal hernia is a common pathology seen during surgical practice. It is a more frequent practice among elderly patients as compared to younger population. Difference between the two age groups is: 11/10,000 person-years in age group of 16-24 years while 200/10,000 person-years in age group > 75 years [1]. Males are affected more as compared to female with a ratio of 20:1 [2]. Prosthetic repair of inguinal hernia is a frequently performed procedure all over the world (approximately 730000 surgeries for repair for inguinal hernia are performed every year in United States [3]. Nearly 80% of inguinal hernia operations are performed under general anesthesia versus 15%-20% under local anesthesia, despite the absence of evidence for improved perioperative outcomes with the former [4,5]. Several small randomized trials and observational studies suggested that local anesthesia for hernia repair reduces morbidity by up to 30%, unplanned admissions by 20%, and operative time and costs by 15%, while other studies showed no significant differences [7,8,9,10]. These studies focused on younger patients (<65 years old) with limited comorbidities, largely ignoring elderly patients. Utilizing the conception of tension free prosthetic mesh repair, the

surgery for inguinal repair have evolved many techniques like Lichtenstein's repair and also more recently laparoscopic total extra-peritoneal (TEP) repair for hernia [11,12,13]. Usually, the only presentation of inguinal hernia is swelling, sometimes it may generate aching and discomfort, but it has been noticed that it hampers the quality of life in geriatric population which may be improved with hernioplasty [14]. Moreover, if inguinalhernia are left without treatment, they put the patients on increased risk of complications like bowel obstruction and/ or strangulation which may be threatening to life [15,16]. Moreover, the load of services required to manage the problem in elderly patients is higher than adult population due to presence of co-morbid conditions [17].Among the various available anesthesia options, general or regional anesthesia are widely used for repair of inguinal hernia. Safety of the patients and optimization of operating condition is the preference of surgeons while selecting the anesthesia for the patients [18].Local anesthesia can be considered for hernial repair operations, in the were as where lack of trained personal and anaesthesic facilities are not available. There is a long waiting list for hernia repair surgeries & it is found from the studies that local anesthesia reduced the hospital stay and cost with fewer complications. So this work is designed to study that hernioplasty can be performed without trained anaesthesic staff by operating surgeon. Local anesthesia aided with intravenous sedation used during the surgery may lessen the impact on functioning of vital organs like heart, lungs, or central nervous system. Moreover, it may reduce the hospital stay and may help in early recovery of the patients [19,20].

Materials And Methods

In this prospective studywas conducted in the Anesthesia Department, Sher-E-Bangla Medical College Hospital, Barishal, Bangladesh from January to December 2021. We enrolled 70 consecutive high risk elderly (age > 65 years) male patients who were admitted for repair of inguinal hernia outpatients' department. The inclusion criteria were presence of reducible inguinal hernia (the swelling disappears in lying down and positive cough impulse) and no signs of bowel obstruction or strangulation (vomiting, pain, tender irreducible swelling). Patients were assessed for anaesthesia fitness according to American society of anesthesiology scale (ASA I-IV). The criteria for labeling high risk was; presence of co-morbid conditions like ischemic heart disease, previous cardiac surgery or stenting, COPD, DM, HTN, arrhythmias, liver cirrhosis, obesity, chronic kidney disease, and deranged clotting profile. The patients who had recurrent or bilateral disease or unwilling for local anesthesia were excluded from the study. Detailed history and thorough physical examination was done. Routine laboratory investigations were done in every case. X-ray chest and electrocardiogram (ECG) was also done in every patient. High risk consent was taken in every. All the patients received prosthetic mesh repair for inguinal hernia under local anaesthesia. Anaesthetic solution used was 50:50 mixture of 1% xylocaine and 0.5% bupivacaine with 1:2,00,000 epinephrine. Approximately 2.5 cm from iliac rest, a skin weal was elevated along the line joining anterior superior iliac spine to umbilicus. The needle was then approximated through this point to hit inner side of iliac bone below iliac crest. Approximately, 10 ml solution was injected as the needle was withdrawn slowly. A repeat injection was given after the reinsertion of needle at a slightly steeper angle and 5 ml of solution injected. For 2nd point of the block, a point 2cm above the mid inguinal point was selected. Through this point, needle was inserted in a perpendicular fashion, until it pierced the aponeurosisof external oblique. A ten ml of solution was injected at this depth and 5 ml as needle was withdrawn over 2cm. Then another weal was raised over the pubic tubercle and sub periosteal injection of 3 cc of solution was given. Later, the completion of block was achieved by injection 10 ml solution in the subcutaneous plane along the line of surgical incision.

During surgery, the patients were assessed for tolerability: development of arrhythmia (abnormal ECG on cardiac monitor), bradycardia (heart rate <45 beats/min), nausea or vomiting, pain during the procedure (measured on VAS, a score of > 1 was taken as pain), need for additional anesthesia (general or spinal) during surgery, requisition of any cardiopulmonary resuscitation or headache. Tolerability was labeled as 'yes' if none of the above was present. Patients were discharged on the same day or in the next day if no complications of the procedure (hematoma, pain or urinary retention) occur. The patients were followed up on outdoor basis over a period of three months for the following complications, like wound site hematoma or seroma, scrotal hematoma or seroma, wound infection or mesh infection, and/ or pain. All the data was entered through SPSS version 20 and analyzed through it.

Results

In the present study age of the patient varied from 20 to 70 years with the highest prevalence noted in the age group of 31-40 years.The mean age was 78.2±9.64 years (range 65–93 years). Present study shows more than 97.2% are male with only 2.8% of female presenting with inguinal hernia.Direct hernia was present in all (100%) patients, while 16(16%) patients also had indirect hernia. Right sided hernias were present in 67(67%) patients, while left sided hernias were present in 37(37%) patients. There were 71(71%) patients who had incomplete inguinal hernia, while 29(29%) patients had complete inguinal hernia. The intraoperative and postoperative complications. The procedure was successfully completed in all patients. The mean operative time was 46.35+7.82 minutes. No intra operative or postoperative mortality was observed. The mean hospital stay of the patients was 1.02+0.57 days. Pain during procedure was seen in 3(4.2%) patients, while nausea/vomiting and headache in 1(1.4%) patient each. Postoperatively, pain was seen among 3(4.2%) patients, urinary retention in 1(1.4%), inguinodynia in 1(1.4%) patient, and scrotal hematoma in 2(2.8%) patients.

Table-1: Age Distribution of the patients (N=70)

Age In Years	No Of Patients	Percentage%
20-30	20	28.5
31-40	26	37.1
41-50	11	15.1
51-60	9	12.8
61-70	4	5.7
Total	50	100.0

Table-2: Sex Distribution (N=70)

Sex	Number Of Patients	Percentage %
Male	68	97.2
Female	2	2.8

Table-3: Associated co-morbid conditions among the patients (N=70)

Co-morbid conditions	n	%
Obesity	4	5.7%
Hypertension	39	55.7%
Diabetes mellitus	16	22.8%
Arrythmias	2	2.8%
Ischemic heart disease	31	44.3%
Chronic obstructive pulmonary disease	12	17.1%
Chronic liver disease	6	8.6%
Renal failure	9	12.9%
Deranged clotting or bleeding profile	5	7.1%

Table-4: Tolerability of the procedure (N=5)

Parameters	n	%
Arrythmias	0	0
Bradycardia	0	0
Pain during the procedure	3	4.2%
Need for another anesthesia (general or local)	0	0
Requisition of cardiac or pulmonary resuscitation during surgery	0	0
Nausea or vomiting	1	1.4%
Headache	1	1.4%

Table-5: Outcome of the procedure (N=80)

Pathologies traced	n	%age
Wound hematoma/ seroma	1	1.4%
Wound infection	0	0
Scrotal hematoma/ swelling	2	2.8%
Urinary retention	1	1.4%
Postoperative pain (VAS >1)	3	4.2%
Mesh infection	0	0
Inguinodynia	1	1.4%

DISCUSSION

Hernia repair is preferably performed under general and regional anesthesia because it provides proper anesthesia at operative site. It is presumed that this objective cannot be achieved under local anesthesia. This is mainly due to faulty technique of local anesthesia as surgeons are not properly trained in this technique. Various local anesthesia techniques have been described to anesthetize this region [1,7,8,9,10]. Repair of inguinal hernia is preferably done under general or regional anesthesias among as both offer optimal operating circumstances to the surgeon in term of adequate muscle relaxation and immobility of the patients. The other advantage is better intraoperative or postoperative control of pain. But with increasing age, the patients may acquire variety of co-morbid conditions which make them high risk for general or regional anesthesia. In this scenario, local anesthesia can be a safe option for such patients [17,18].However, the trend of adopting local anesthesia as option for surgery is not very popular among surgeons. The utility of local anaesthesia in repair of inguinal hernia fluctuates from only 3% in Sweden, 18 % in Denmark and almost 100% in Should ice clinic, Toronto clinic and some other dedicated hernia center [19]. In the present study age of the patient varied from 20 to 70 years with the highest prevalence noted in the age group of 31-40 years. The mean age was 78.2±9.64 years (range 65–93

years). Present study shows more than 97.2% are male with only 2.8% of female presenting with inguinal hernia. The incidence of age at presentation of inguinal hernia was maximum between 30-60 years of life [20,21,22]. These results are comparable with the present study.In study by Ira [14], 90% inguinal hernia cases were in males patients & 10% were females, study by Liechtenstein [23] 94% were male patients & 6% female patients. Occurring at any age males are more commonly affected then females. In present study 97.2% were male & 2.8% were females. The percentage of females in this study is less compared to other studies. This may be due to less awareness of women about hernia. Socio -economic & educational level of the female patients contribute to less number of female presenting to hospital with inguinal hernia in early stage in our study.Only a few centers had reported practicing this and no isolated study had been done in elderly population with co-morbid condition. We selected a study population of >65 years, because the studies have shown that frequency of inguinal herniats and associated co-morbid condition is higher in this age group. We found that most common co-morbid condition was hypertension (56%) followed by ischemic heart disease (44%). COPD was also seen among 17% patients and diabetes was also another problem which was found in 22(22%) patients. Amato B, et al, also highlighted that these problem were also common in their study population like 25% patients suffered from hypertension, 50% suffered from coronary disease, diabetes 10%, and COPD in 12.5% patients. These were the conditions which make the patients more suitable for repair under local anesthesia. The frequency of these co-morbid conditions may vary in different geographical area. Regarding the cardiovascular disease in elder population, this has been observed in a previous study by Frazzetta M, et al [24], that the prosthetic hernioplasty carries the similar advantage (quicker recuperation) as in elderly non cardiac risk patients. Moreover, there was difference in early or late complication among patients with cardiac risk factor or without it. Only 3% patients suffered from pain, which was managed with IV sedation with midazolam (5mg administered intravenously), nausea/ vomiting in 1% each which were managed with central antiemetic agents (ondasetron 8mg intravenously stat). Headache was observed in only 1% patients which was managed with intravenous infusion of paracetamol 500mg given in stat dose. Pain during surgery is the most important concern of the patients. We observed a very low incidence of pain during surgery. Baskerville PA et al [25] conducted a study among 129 patients undergoing repair of inguinal hernia under local anesthesia and observed that 93% patients did not suffer any pain. Earle AS, et al [26], observed that pain was observed in 50% patients in their study. They also observed pain occurred during manipulation of larger sacs, with adhesions. However, we did not include incarcerated hernia. In our study, 91% patients recovered uneventfully in the postoperative period. The most common problem was postoperative pain which was observed in 4% patients, followed by scrotal hematoma developed in 2% patients. Shaikh et al [27] observed successful recovery in 90.7% of the patients. In their study, 5% had wound infection, while Amid et al. observed wound sepsis in 2% patients. Gianetta et al [28], observed development of scrotal hematoma in 2.7% patients, and wound sepsis in 0.7% patients. In a study by Chowlek et al [29] wound infection and scrotal edema was observed in 3.5% patients and urinary retention was observed in 1.75% patients. In our study, we observed inguinodynia in 1% patient, while Erhan et al [30], mentioned igunioynia in 4-6%, and Phoolbalan et al [31], reported inguidoynia in 10% cases after prothetic repair of inguinal hernia. Our low rate of inguinodynia may be explained with identification of Ilioinguinal nerve or Iliohypogastric nerve during open dissection. It may also be due to the reason that all the surgeries were done by an experienced consultant surgeons. In our study, we did not observe any mortality. None of the study which had done this procedure under local anesthesia had documented mortality in any case. Chen T, et al [32] mentioned a mortality rate of 1.7% among patients receiving hernia repair under general anesthesia. Inguinal hernia is common in middle and old age. Many patients in this age group suffer from cardiac, pulmonary and urinary tract diseases[17]. These patients are also more prone to develop cardiac, pulmonary and urinary complications if repair is performed under general and spinal anesthesia. This risk can be minimized under local anesthesia [13,30]. Anaphylaxis is known complication of local anesthesia. Study done by Davis Let al in 2003 reported anaphylaxis rate of about 1% to local anaesthesia [28,32]. In our study no patient suffered from this complication. Local anesthesia reduces post-operative pain because of the gradual on set of pain [29,12,28]. These patients need lesser doses of post-operative analgesics [30].

CONCLUSION

It is concluded that the practice of inguinal hernia repair under local anesthesia for elderly patients who are at high risk for regional or general anesthesia is well tolerated by the patients and shows promising outcome. In these elderly patients considering the co-morbid conditions and high intraoperative risk, local anesthesia may be a good alternative choice against general or regional anesthesia.

REFERENCES

1. Bholla Singh Sidhu et al (1999). Tension free Hernioplasty under local anaesthesia Gilbert repair. Indian journal of surgery Vol 61: 310-314.
2. Burke J B & Taylor M (1978). Clinical & economic effect of early return to work after elective inguinal hernia repair. British Journal of surgery Vol 65: 728-731.
3. Canon S R et al, (1982). Early discharge following hernia repair in unselected patients. British journal of surgery Vol 69: 112-113.
4. David V Young (1987). Comparison of local, spinal & general anaesthesia for inguinal herniorraphy. American journal of surgery Vol 153: 560-563.

5. Delvin H(1988), Brenden: Management of abdominal hernias, London; Butter Worths & company Ltd, 220p.
6. Bhattacharya, S. D., Vaslef, S. N., Pappas, T. N., & Scarborough, J. E. (2012). Locoregional versus general anesthesia for open inguinal herniorrhaphy: a National Surgical Quality Improvement Program analysis. The American Surgeon, 78(7), 798-802.
7. Neumayer, L., Giobbie-Hurder, A., Jonasson, O., Fitzgibbons Jr, R., Dunlop, D., Gibbs, J., ... & Henderson, W. (2004). Open mesh versus laparoscopic mesh repair of inguinal hernia. New England journal of medicine, 350(18), 1819-1827.
8. Nordin, P., Zetterström, H., Carlsson, P., & Nilsson, E. (2007). Cost–effectiveness analysis of local, regional and general anaesthesia for inguinal hernia repair using data from a randomized clinical trial. Journal of British Surgery, 94(4), 500-505.
9. Nordin, P., Zetterström, H., Gunnarsson, U., & Nilsson, E. (2003). Local, regional, or general anaesthesia in groin hernia repair: multicentre randomised trial. The Lancet, 362(9387), 853-858.
10. O'Dwyer, P. J., Serpell, M. G., Millar, K., Paterson, C., Young, D., Hair, A., ... & Ford, I. (2003). Local or general anesthesia for open hernia repair: a randomized trial. Annals of surgery, 237(4), 574-579.
11. Glassow, F. (1984). Inguinal hernia repair using local anaesthesia. Annals of the royal college of surgeons of England, 66(6), 382.
12. Fasih, T., Mahapatra, T. K., & Waddington, R. T. (2000). Early results of inguinal hernia repair by the'mesh plug'technique--first 200 cases. Annals of the Royal College of Surgeons of England, 82(6), 396.
13. George E Wantz (1984). Complications of inguinal hernia repair. Surgical clinics of North America, Vol64, no 2: 287-298.
14. Ira M Rutkow (1998). Epidemologic, economic & sociologic aspects of hernia surgery in the united states in the 1990's. Surgical clinics of north America Vol 78. No 6:941-951.
15. Abdu, R. A. (1983). Ambulatory herniorrhaphy under local anesthesia in a community hospital. The American Journal of Surgery, 145(3), 353-356.
16. Amid, P. K., Shulman, A. G., & Lichtenstein, I. L. (1994). Local anesthesia for inguinal hernia repair step-by-step procedure. Annals of surgery, 220(6), 735.
17. Pavlidis, T. E., Symeonidis, N. G., Rafailidis, S. F., Psarras, K., Ballas, K. D., Baltatzis, M. E., ... & Sakantamis, A. K. (2010). Tension-free by mesh-plug technique for inguinal hernia repair in elderly patients. Scandinavian Journal of Surgery, 99(3), 137-141.
18. Sanjay, P., & Woodward, A. (2007). Inguinal hernia repair: local or general anaesthesia?. The Annals of The Royal College of Surgeons of England, 89(5), 497-503.
19. Meier, Albert E(1971). Surgical clinics of North America- symposium on surgery of hernia, Philadelphia, W B Saunders Co; Vol 51, 1249-1254.
20. Delvin H(1988), Brenden: Management of abdominal hernias, London; Butter Worths & company Ltd, 220p.
21. Bholla Singh Sidhu et al (1999). Tension free Hernioplasty under local anaesthesia Gilbert repair. Indian journal of surgery Vol 61: 310-314.
22. Irving L Lichtenstien (1987). Herniorrhaphy, A personal experience with 6321cases.American journal of surgery. Vol153: 553-559.
23. Garavello A, Manfroni S, Antonellis D(2004). Inguinal hernia in the elderly. Indication, techniques, results. Minerva Chir; 59(3):271-6.
24. Frazzetta M, Di Gesù G(2005). Inguinal hernia surgery performed on elderly cardio path patients. Acta Biomed; 76; Suppl 1:42-5.
25. Baskerville, P. A., & Jarrett, P. E. (1983). Day case inguinal hernia repair under local anaesthetic. Annals of the Royal College of Surgeons of England, 65(4), 224.
26. Earle AS(1960). Local anaesthesia in inguinal hernia repair. Am J Surg; 100:782.
27. Shaikh MS, Abro AA, Naz S, Shaikh SA et al(2009). Outcomes of open mesh hernia repair: five years' experience at Chandka Medical College Hospital Larkana. JLUMHS; 8(3):205-9.
28. Gianetta E, de Cian F, Cuneo S, Friedman D, et al(1997). Hernia repair in elderly patients. Br J Surg; 84:983-5.
29. Chowlek SD, Grace RA(2013). Inguinal hernias in patients of 50 years and above. Pattern and outcome. Rev Col Bras Cir [Internet]. Oct [cited 2016 June 19]; 40(5): 374-379.
30. Erhan Y, Erhan E, Aydede H, Mercan M, Tok D(2008). Chronic pain after Lichtenstein and preperitoneal (posterior) hernia repair. Can J Surg; 51(5):383-7.
31. Poobalan AS, Bruce J, Smith WC, King PM, Krukowski ZH, Chambers WA(2003). A review of chronic pain after inguinal herniorrhaphy. Clin J Pain; 19(1):48-54.
32. Chen T, Zhang Y, Wang H, Ni1(2016). Emergency inguinal hernia repair under local anesthesia: a 5-year experience in a teaching hospital. BMC Anesthesiology; 16:17.