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A Study of Laparoscopic Versus Open Inguinal Hernia Repair on Patients Over 65 Years of Age

Dr. Sanjay Ghate Assistant professor, Department of Surgery, GMC, Chandrapur

Dr. Pranay Gandhi Assistant Professor in community medicine, GMC, Chandrapur

ABSTRACT

Aim: In this record based retrospective study, we aimed at comparing the laparoscopic and conventional open inguinal hernia repair procedures in the population over 65 years of age. Materials and methods: The medical data of 108 patients over 65 years of age who presented with inguinal hernia and underwent surgical treatment between 1st january 2012 and 31st December 2015 in a tertiary Hospital, General Surgery Department were considered. Results: The mean age of patients in the open procedure group (n=75) and in the laparoscopic group (n=33) was 82 and 81 years, respectively. The mean American Society of Anaesthesiologists score was 2-7 in the open group and 2-4 in the laparoscopic group (P<0.005). There was no statistically significant difference between the groups with respect to perioperative complications. There was no mortality. Conclusion: Similar to the outcome of open procedure, laparoscopic inguinal hernia repair can safely be performed without an increase in morbidity and mortality in the advanced age population.

KEYWORDS : Inguinal hernia, complications, herniorrhaphy, over 65 years of age

Introduction

Whereas the risk of developing an inguinal hernia is 1.7% in the general population, this risk rises to about 4% after the age of 45 [1,2]. The incidence of inguinal hernia in the population between the ages of 16 to 24 years is 11/10,000 person-years. This rate rises to above 200/10,000 person-years in the population aged above 75 years [2,3]. Elective inguinal hernia repair is generally associated with an estimated mortality rate below 0.01% [4].

Elderly patients who present with minimal symptoms that do not affect their daily activities are advised to postpone surgical intervention to avoid possible complications [5].

In developed countries, people over the age of 85 comprise 2% of the general population; by the year 2050, it is estimated that this percentage will double [6]. This implies that the rate of presentation to the hospitals of inguinal hernias will also increase [2,3,7]. The conventional approach for inguinal hernia repair is open procedure [8,9]. Since 1993, when Watson and colleagues first published their report on laparoscopic hernia repair and bowel resection, there have been controversial reports concerning the advantages and disadvantages of this approach, especially in the elderly age group [9,10]. Velasco and colleagues advocated a preference for laparoscopic herniorrhaphy for patients above the age of 65 years owing to their findings of associated lowered morbidity, acceptable recurrence rates, shorter hospital stays and an earlier return to normal activities [11]. The aim of the current study is to determine the optimal approach to inguinal hernia repair in the population over 65 years of age by retrospectively comparing the surgical outcomes of patients in this age group who underwent conventional open repair or laparoscopic repair.

Materials and methods

Medical data from patients who underwent inguinal hernia repair in a tertiary Hospital, General Surgery Department between 1st january 2012 and 31st December 2015 were retrospectively recorded. The study was carried out from 1st january 2016 to 29th february 2016. Emergency cases were excluded from the study.

Results

One hundred and eight patients who underwent elective inguinal hernia repair were included in the study. Of these patients, 75 underwent open repair and 33 underwent laparoscopic repair. In the open and laparoscopic groups, the mean ages were 82 and 81, respectively, and the male patients constituted 85.4% and 89.2%, respectively.

The overall comorbidities were similar in both groups. In the open and laparoscopic groups, the mean ASA scores were 2.7±0.6 and 2.4±0.08, respectively. Fifty-six per cent of the laparoscopic procedures were bilateral.

Characteristics of patients

All patients that underwent the laparoscopic procedure and 33% of patients that underwent the open procedure received general anaesthesia. There was no statistically significant difference in mean operation time between the two groups (72.1±13.3 minutes in the laparoscopic group versus 74.0±5.6 minutes in the laparoscopic group, P=ns). The laparoscopic group received a significantly higher mean volume of intraoperative intravenous fluid infusions (laparoscopic group 1,150 ml versus 750 ml in the open group, P<0.01)

(table 1 comes here)

Operative data

There was no difference in the unadjusted complication rates between the groups (10.6% in open group versus 27.2% in laparoscopic group). The most frequently encountered complication was urinary retention, which occurred in 6.6% of the open group and 21.2% of the laparoscopic group. Other postoperative complications included pain, arrhythmia, changes in the state of consciousness and hypotension. There was no statistically significant difference in the unadjusted hospital stay time between the two groups. After adjusting for patient risk factors, independent variables were tested for postoperative outcome relations. Surgical procedure, benign prostate hypertrophy, bilateral repair or other variables were not found to be related to prolonged hospital stay times. There was no mortality in either group.

(Table 2 comes here)

(table 3 comes here)

Discussion

This study shows that laparoscopic inguinal hernia repair can be safely performed in the advanced age population. Langeveld and colleagues proposed laparoscopic hernia repair for the general population based on their study of patients with a mean age of 55 years and ASA score [12]. The study shows that the laparoscopic approach led to more favourable results in terms of less postoperative pain and an earlier return to normal daily activities. A meta-analysis of randomised control studies performed by Schmedt and colleagues advocated the advantages of the laparoscopic approach versus Lichtenstein repair based on local complications and pain-related parameters [13].

Eklund and colleagues performed a cost-reduction analysis on 5 follow-up cases and reported no significant difference in general cost between open and laparoscopic procedures [14].

The majority of the patients in the open repair group had past histories of myocardial infarction and high ASA scores. Between the open and laparoscopic groups, there were no significant differences in ASA scores and the prevalence of hypertension. There appeared to be a tendency to choose open surgery in cases with more risk factors. Yet, the above findings did not differ when variables were adjusted for risk factors.

There were no significant differences between the open and laparoscopic groups with respect to the incidence of complications. The most frequently encountered complication in the laparoscopic group was urinary retention. This finding enticed us to analyse in detail the factors that might be affecting this complication. Looking at the intraoperative data, there were significant differences between the two groups with respect to the mean volume of intraoperative intravenous fluid infused and the type of anaesthesia employed. In the laparoscopic group, there was a higher rate of urinary retention. This finding may be due to the fact that all patients in this group underwent general anaesthesia, and higher volumes of intraoperative intravenous fluid were given. These factors were attributed to urinary retention [15-17].

According to the multivariate analysis, surgical approach, age, gender, hernia site (unilateral or bilateral), ASA score and mean volume of intraoperative intravenous fluid infused were found to have no significant effect on the mean hospital stay time. Even subsequent to adjustment for comorbidities like benign prostate hypertrophy and other intraoperative characteristics, there was no significant effect on the mean hospital stay time. These findings are consistent with those of Koch and colleagues, who did not find an increase in postoperative urinary retention rates, even in patients with benign prostate hyperplasia [15].

There was no mortality, morbidity or significant complication in the elderly patients who underwent open or laparoscopic inguinal herniorrhaphy. Our study advocates laparoscopic inguinal hernia repair as a safe alternative procedure for patients over 65 years of age, regardless of whether the case is bilateral. Results from studies with larger samples and longer durations are still needed.

Table 1 : Perioperative factors influencing on the length of postoperative hospital day (POHD)

	POHD ≤ 2 days (n=225)	POHD > 2 days (n=111)	P value
Operation time (mins), mean (range)	45 (14-190)	77 (16-371)	<0.001
Perioperative transfusion (n) :Yes No	1 (0.5%) 216 (99.5%)	6 (5.6%) 102 (94.4%)	0.006
Emergency operation (n): Yes No	9 (4%) 216 (96%)	23 (20.7%) 88 (79.3%)	<0.001
Previous abdominal operation history: Yes No	36 (16.1%) 187 (83.9%)	20 (18%) 91 (82%)	0.782
Acute inflammation (n): Yes No	24 (10.7%) 201 (89.3%)	47 (42.3%) 64 (57.7%)	<0.001
Gallbladder stone (n): Yes No	61 (27.1%) 164 (72.9%)	31 (28.2%) 79 (71.8%)	0.837
Surgical site infection (n): Yes No	2 (0.9%) 218 (99.1%)	5 (4.6%) 103 (95.4%)	0.041

Table 2: Patient factors influencing on the length of postoperative hospital day (POHD).

	POHD≤2days (n=225)	POHD>2days (n=111)	p-value
Age (years): <65 years ≥65 years	180(80.0%) 45(20.0%)	75(67.6%) 36(32.4%)	0.012
Gender(n): Male Female	85(37.8%) 140(62.2%)	56(50.5%) 55(49.5%)	0.036
BMI, mean	25±15.2	24.2±3.2	0.618
Diabetes mellitus(n): yes No	22(10.0%) 198(98.2%)	22(20.2%) 87(79.8%)	0.011
Albumin(n): <3g/dl ≥3g/dl	4(1.8%) 218(98.2%)	8(7.3%) 102(92.7%)	0.024
Smoking(n): Yes No	25(11.2%) 199(88.8%)	25(22.5%) 86(77.5%)	0.010
ASA score(n): 1 2 3 4	122(54.2%) 87(38.7%) 16(7.1%) 0(0%)	40(36%) 63(56.8%) 7(6.3%) 1(0.9%)	0.003

Table 3: Multivariate logistic regression analysis of influencing factors on length of postoperative hospital stay

	p-value	Odds ratio	95% CI
Operation time	<0.001	1.030	1.005-1.045
Emergency operation	<0.001	6.104	2.293-16.250
Age	0.014	1.025	1.005-1.045
Smoking	0.022	2.341	1.129-4.853

References

1. Rutkow IM, Robbins AW. Demographic, classificatory, and socioeconomic aspects of hernia repair in the United States. Surg Clin North Am. 1993;73:413–426.
2. Ramanan B, Maloley BJ, Fitzgibbons RJ Jr. Inguinal hernia: follow or repair? Adv Surg. 2014;48:1–11.
3. Turrentine FE, Wang H, Simpson VB, Jones RS. Surgical risk factors, morbidity, and mortality in elderly patients. J Am Coll Surg. 2006;203:865–877.
4. Kingsnorth A, LeBlanc K. Hernias: inguinal and incisional. Lancet.2003;362:1561–1571.
5. Kurzer M, Kark A, Hussain ST. Day-case inguinal hernia repair in elderly: a surgical priority. Hernia. 2009;13:131–136.
6. Hernandez-Roza J, Lo CC, Choi JJ, Colon MJ, Boudourakis L, Telem DA. Laparoscopic versus open inguinal hernia repair in octogenarians. Hernia.2011;15:655–658.
7. Purkayasta S, Chow A, Athanasiou T, Tekkis P, Darzi A. Inguinal hernia. BMJ Clin Evid. 2008:2008.
8. Deeba S, Purkayastha S, Paraskevas P, Athanasiou T, Darzi A, Zacharakis E. Laparoscopic approach to incarcerated and strangulated inguinal hernias. JSLS.2009;13:327–331.
9. Woods B, Neumayer L. Open repair of inguinal: an-evidence-based review. Surg Clin North Am. 2008;88:139–155.
10. Watson SD, Saye W, Hollier PA. Combined laparoscopic incarcerated herniorrhaphy and small bowel resection. Surg Laparosc Endosc. 1993;3:106–108.
11. Velasco JM, Vallina VL, Esposito DJ, Theodore S. Laparoscopic herniorrhaphy in the geriatric population. Am Surg. 1998;64:633–637.
12. Langeveld HR, van't Riet M, Weidema WF, Stassen LP, Steyerberg EW, Lange J, Bonjer HJ, Jeekel J. Total extraperitoneal inguinal hernia repair compared with Lichtenstein (the Level-trial): a randomized controlled trial. Ann Surg. 2010;251:819–824.
13. Schmedt CG, Sauerland S, Bittner R. Comparison of endoscopic procedures vs Lichten-stein and other open mesh techniques for inguinal hernia repair: a meta-analysis of randomized controlled trials. Surg Endosc. 2005;19:188–199.
14. Eklund A, Carlsson P, Rosenblad A, Montgomery A, Bergkvist L, Rudberg C. Swedish Multicentre Trial of Inguinal Hernia Repair by Laparoscopy (SMIL) study group. Long-term cost-minimization analysis comparing laparoscopic with open (Lichtenstein) inguinal hernia repair. Br J Surg. 2010;97:765–771.
15. Koch CA, Grinberg GG, Farley DR. Incidence and risk factors for urinary retention after endoscopic hernia repair. Am J Surg. 2006;191:381–385.
16. Jensen P, Mikkelsen T, Kehlet H. Postherniorrhaphy urinary retention-effect of local, regional, and general anesthesia: a review. Reg Anesth Pain Med. 2002;27:612–617.
17. Aly O, Green A, Joy M, Wong CH, Al-Kandari A, Cheng S, Malik M. Is laparoscopic inguinal hernia repair more effective than open repair? J Coll Physicians Surg Pak. 2011;21:291–296.