ORIGINAL ARTICLE

Use of Prophylactic Antibiotics in Inguinal Hernia Repair: A Randomized Study in Tertiary care hospital Karachi

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Abstract:
Objective: To detect the use of prophylactic antibiotics in inguinal hernia repair.
Design: Prospective study.
Setting and duration: KVSS SITE Hospital, Karachi from January 2012 to December 2012
Methodology: A total of two hundred patients were included that underwent inguinal hernia repair at KVSS SITE Hospital, Karachi during the period. They were randomized in two groups. Group 1 was given prophylactic dose of injamoxi-clav while group 2 was given placebo only. Results were compared and Data analyzed using the Chi-square test. Complications in both the groups were compared.
Results: Rate of serous discharge and seroma formation was 1% and 22% respectively in group 1 while 2% and 26% in group 2 also the rate of erythema and stitch abscess were 1% and none in group 1 and 2% and 1% in group 2 respectively. On statistical analysis these differences were not significant.
Conclusion: Prophylactic antibiotics in elective inguinal hernia repair have no substantial advantage over placebo although more studies are essential to prepare someAddition of prophylactic antibiotics in elective open inguinal hernia repair has no significant benefit over placebo although larger studies are required to prepare some uniform guidelines.
guidelines.

Keywords: Antibiotic,Hernia,Repair

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Introduction:

Prophylactic administration of antibiotics preoperativelyhas become a very important aspect of care of surgicalpatients. Recommendations in literature are clear for theiruse in contaminated and clean-contaminated cases butpicture is not so clear in clean surgical cases. Open Inguinalhernia repair using prosthetic mesh is an example of suchcases where the preoperative use of antibiotics is debated.Prophylactic antibiotics are those which are given to thepatients before the contamination or infection has occurredand in surgical patients these are given just before or duringthe surgery. The seminal studies of Burke in animals[1] and Palk and Lopez Mayor in patients established thateffective prophylaxis require the administration of antimicrobialregimen before the skin is incised. Clinical trials andpharmacokinetic data have shown thatprophylactic agentsshould be given at the time of induction. If duration of operation is prolonged (more than 4 hrs), repeated doseshould be administered after 2 half lives of the drug. Thegoal is to lessen postoperative morbidity, shorten hospitalization,and reduce the overall cost attributable to theinfections.Haley et al. have shown that surgical wound infectionprolongs hospitalization for approximately 1 week and adds20–30% cost to the hospital bill, on the other-handinappropriate and indiscriminate use of prophylactic antibioticsmay increase the cost and unnecessary drug use andgrowth of resistant organisms [2]. Purpose of this study is to try and find out a clearguideline for use of prophy-

lactic antibiotics in mesh repairof inguinal hernia so that any inadvertant overuse ofantibiotics is avoided as well as goal of infection freesurgical wound is achieved.

Methodology:

This is a prospective study done on cases of inguinal herniaadmitted for mesh repair in a surgical unit of a tertiary carehospital over a period of 1 year.Patients from all age groups and either sex as well ashaving any type of primary inguinal hernia admitted to ourunit over a period of 1 year were included in the study.

Patients with complicated, strangulated hernia, thosehaving local skin infection, systemic infection, diabetes orhistory of antibiotic use within previous week wereexcluded from the study. Patients were randomized in two groups by randomnumber table method, Group 1 as cases and Group 2 ascontrols.After routiene investigations and pre-anaesthetic checkupthey were subjected to Lichenstien's method of tensionfree mesh repair.Informed consent was taken.Skin preparation was same in both the groups usingpreoperative shaving and 10% povidone iodine asdisinfectant.Group 1 was given iv injection of 1.2 gm amoxicillin-clavulanatein 20 ml saline at the time of induction whileother group was given 20 ml of sterile saline as placebo.Postoperatively patients were discharged on day onewith advise to take analgesic sos, they were contactedtelephonically on POD 2 regarding any complains andwere asked to come to the ward if there is any, theywere then called on day 8 for examination and sutureremoval. Data was analysed using Chi square test.

Results:

Table 1 show the number of patients in each age group. There were 70.5% of patients in age group of 31–70 years.So both the groups were comparable demographically. Complications in both the groups were compared andtabulated (Table 2). Rate of serous discharge and seromaformation was 1% and 22% respectively in group 1 while2% and 26% in group 2, p value.33 and.43 respectively.also the rate of erythema and stitch abscess were 1% andnone in group 1 and 2% and 1% in group 2, p value.33 and1.00 respectively.

Discussion:

Wound infection is one of the most commonly occurringsurgical complications. Infection of a wound may resultfrom a number of factors both intrinsic and extrinsic topatient. Although many of intrinsic factors can not bemodified, the external ones can certainly be influenced. Inparticular these are related to aseptic conditions, surgicaltechnique and peri-operative care. However even under themost scrupulous aseptic conditions and with a carefultechnique, post operative wound infection still present avery serious problem. The use of antibiotic prophylaxis to avoid infectiouscomplications of surgery is very common in surgicalpractice. However, indiscriminate use of antibiotics canlead to problem including an increase in cost and theemergence of resistant micro-organisms. The benefits ofantibiotic prophylaxis either in clean contaminated, contaminatedand dirty surgery are universally accepted.Antibiotic prophylaxis is generally accepted in cleansurgery when placement of prosthetic materials or thepresence of infection poses a significant risk to patient. Nonetheless, controversy remains about the use of antibioticsin some types of clean surgery. Surgery for inguinal hernia is one of the most commontechniques performed in general surgery making upapproximately a third of total interventions[3]. This type of surgery is considered clean and it has beenestimated that rate of post operative infection should not begreater than 2%[4, 5]. Currently, the use of antibiotics prophylaxis isrecommended for elective open mesh inguinal herniarepair [4, 5]. However this treatment is not universallyaccepted. For hernia repair not involving prostheticmaterial, the antibiotics prophylaxis is not recommendedin absence of risk factors but controversy arises whenwound infection rates exceed the expected figures[6,7]. Contradictory results from clinical trials and the investigatingeffectiveness of antibiotics prophylaxis have complicatedthis situation[8]. We conducted a single centre prospective randomizedstudy with view to clarify this issue on scientific basis.Total 200 patients were evaluated and they were randomized to have antibiotic prophylaxis

Table 1: *Age distribution*

Age range	No. of patients	%
11–20	18	9%
21–30	22	11%
31–40	32	16%
41–50	38	19%
51–60	43	22.5%
61–70	26	13%
71–80	17	8.5%
81–90	4	2%

Table 2: *Complications in both groups*

	Group 1 n=100	Group 2 n=100	P value
Serous discharge	1	2	.33
Seroma	22	26	.43
Erythema	1	2	33
Stitch abscess	0	1	1.00

(group I, n=100) and noantibiotic prophylaxis (group 2, n=100). In total 4 caseswith infections were detected. 1 (1%) of these was ingroup A and 3 (2 erythema and 1 stitch abscess) ingroup B. All wound infection were treated with antibiotics,mesh removal was not required in any of thecases. In our study antibiotics do not seem to preventwound infection in any case, as these differences werenot stasistically significant but Turkish trial reportedsignificantly different infection rates between groupreceiving a single dose of amipicillin plus sulbactamand placebo group[9]. Yerdel et al. documented a significant decrease in overallwound infection rate 9% to 0.7% when single dose,intravenous amipicillinsulbactam was used during Lichtensteinhernia repair[9]. Platt 1990 et al. reported a randomized, double blind,placebo, controlled trial of 1218 patients undergoing herniarepair. Of the patients undergoing hernia repair infectionoccurred in 2.3% of those given Prophylactic antibiotics. Therisk ratio was 0.55 with a 95% confidence interval 0.2–1.38.Though the wound infection rate was twice as high in theplacebo group yet it was not statistically significant[10]. Taylor et al. conducted a prospective randomized doubleblind, multicentre study of 619 patients in six hospitals inEngland and Scotland. They show there was no statisticallysignificant difference between antibiotics and placebogroup in each centre[11]. Gervino et al. reported a study of 1254 patientsundergoing hernia repair. No wound infections were noted.Although there were no control group. They used singledose 1 gm ceftrixone[12]. Celdran et al. in a prospective; double blind randomizedcontrolled trial of intravenous antibiotics prophylaxis in inguinalhernia repair. Statistical analysis with student t-test and fisher'sexact test showed the difference between two groups to behighly significant (p=0.059) and trial was stopped early forethical reasons. The author concluded that their resultswarranted the routine use of antibiotic prophylaxis[13]. This has been criticism for most of trials as their datamight have shown the inefficacy of particular antibioticrather than antibiotic prophylaxis in general given the highrate of wound infection in both groups. However, staphylococcus aureus was isolated in most of the cases withinfected wounds in all mentioned trials followed occasionallyby other species of staphylococci and streptococci. Sothis can be assumed that the type of antibiotics used isprobably not responsible for the difference in the mainoutcome between trials.In our study in total 48 (24%) patient developed seroma(localized fluid collection). Out of which 22 (22%) belongsto group I and 26 belongs to group II. Incidence of seromaof formation is higher in Lichenstein repair as compared toother type of repair. In literature shows similar results (up to30%) as in our study.

Conclusion:

In conclusion, we were not able to demonstrate anysignificant benefit from addition of antibiotic prophylaxis.Consisting a single dose of amoxicillin and clavulanic acidin elective inguinal hernia tension free repair using polypropylene mesh in patients who were not at high riskof developing septic condition.

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