

Trends in the management of inguinal hernia in Karachi, Pakistan: a survey of practice patterns

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ABSTRACT

Introduction: The study was conducted to identify and document the various aspects of elective inguinal hernia repair performed by general surgeons working in the different university hospitals of Karachi, Pakistan.

Methods: This questionnaire-based survey, carried out over a two-year period, involved 84 general surgeons of Karachi. The respondents were divided into groups and comparative analysis was carried out.

Results: 65 respondents (77.4 percent) were male and 19 (22.6 percent) were female. Mean years and standard deviation since post graduation were 7.7 and 7.3 years, respectively. 60 respondents (71.4 percent) reported the routine use of prophylactic antibiotics in all inguinal hernia repairs. 34 respondents (40.5 percent) quoted "spinal anaesthesia" as their preferred type of anaesthesia, 46 respondents (54.8 percent) chose to perform the procedure as a day case, and 49 respondents (58.3 percent) reported mesh repair as their preferred type of repair. 60 respondents (71.4 percent) did not recommend the laparoscopic approach to hernia repair. Surgeons associated with private hospitals were found more likely to choose mesh as their preferred method of inguinal hernia repair (p-value is 0.007), but less likely to use prophylactic antibiotics (p-value is 0.05) and respondents with more than ten years of postgraduate experience were found more likely to perform hernia repairs on an inpatient basis (p-value is 0.045).

Conclusion: Various aspects of management of inguinal hernias are still determined by the preference of the operating surgeon. Day case management of hernia repairs, routine use of prophylactic antibiotics, use of mesh and open repair of hernias were the practice of the majority of surgeons, although differences were noted in specific groups of surgeons.

Keywords: herniorrhaphy, inguinal hernia, mesh repair, open hernia repair

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INTRODUCTION

Hernia repair is one of the most common elective general surgical procedures performed worldwide. In the United States and Europe alone, more than a million inguinal hernia repairs are performed annually⁽¹⁾. Since the classic paper by Bassini in 1890, which described the re-approximation of the internal oblique, transversus abdominis muscles and transversalis fascia to the shelving portion of Poupart's ligament, more than 80 operative techniques have been described for inguinal herniorrhaphy⁽²⁾. Each of these techniques can be performed under general, regional or local anaesthesia, which adds to a large number of options that an operating surgeon has for this surgery. Worldwide, the general surgical community is re-exploring the surgical treatment of inguinal hernia. General dissatisfaction with long-term results and morbidity associated with traditional repairs has stimulated interest in several new procedures. Mesh and laparoscopic repairs are only some of those being promoted for their good long-term results and improved recovery from the surgical procedure⁽³⁻⁵⁾.

In Pakistan, for multiple reasons, laparoscopic surgery has not shown significant development beyond cholecystectomy. However, hernia repair using synthetic mesh has gained some acceptance although there is a lack of available published data to support this observation. The first objective of this survey is to find out the perceptions and practices of general surgeons in Karachi with regard to various aspects of management of inguinal hernias including their preferred technique of repair, type of anaesthesia and use of prophylactic antibiotics, and to describe the extent to which mesh repair has been assimilated into general surgical practice in Karachi. The second objective is to find out the attitudes of general surgeons in Karachi toward the laparoscopic approach to inguinal hernia repairs.

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Table I. Distribution of respondents by qualification (n=84).

Qualifications	Frequency	Percent
FCPS	45	53.6
FCPS, MCPS	6	7.2
FCPS, MRCS	2	2.4
FCPS, FRCS	13	15.5
FRCS	11	13.1
DABS	2	2.4
MS	5	6.0
Total	84	100

FCPS = Fellow of College of Physicians and Surgeons, Pakistan

MCPS = Member of College of Physicians and Surgeons, Pakistan

FRCS = Fellow of Royal College of Surgeons, United Kingdom

MRCS = Member of Royal College of Surgeons, United Kingdom

MS = Master of Surgery, Pakistan

DABS = Diploma American Board of Surgery, United States of America

Table II. Distribution of respondents by institution (n=84).

Institution	Private/ public	Number of respondents	Percent
Civil Hospital Karachi and Lyari General Hospital	Public	20	23.8
Jinnah Postgraduate Medical Centre	Public	22	26.2
Abbasi Shaheed Hospital	Public	8	9.5
Aga Khan University Hospital	Private	10	11.9
Liaquat National Postgraduate Medical Institute	Private	7	8.3
Baqai Medical University Hospital	Private	7	8.3
Ziauddin Medical University Hospital	Private	5	6.0
Other private university hospitals	Private	5	6.0
Total		84	100

METHODS

This study was conducted from January 2003 to December 2004, over a period of two years. It is a questionnaire-based knowledge, attitude and practice study, based on a carefully-developed, two-part, self-administered questionnaire (Appendix). Testing of the questionnaire confirmed that the time needed for its completion ranged between five and ten minutes. Informed consent was obtained from each respondent prior to filling up of the questionnaire, and the study was approved by the ethics review committee of Ziauddin Medical University Hospital.

The questionnaires were filled in private by qualified practising general surgeons in Karachi, who were approached in person by the authors, or other doctors assigned by the authors. A qualified general surgeon was defined on the basis of certification of Fellowship, Masters or Diploma in general surgery. The general surgeons were selected by convenience sampling. In the first section of the questionnaire, the respondents were asked to fill in their personal data, without mention of name, or current academic position. In the second section, respondents were given a case scenario of a young adult male with an uncomplicated indirect inguinal hernia and were asked about their preferred operative management (Appendix). This was followed by open-ended questions requiring the respondent to further elaborate on the various aspects of operative management, including antibiotic prophylaxis and choice of anaesthesia. The responses were codified after the collection of data. Homogeneity was maintained by asking the respondents to complete the questionnaire within five to ten minutes.

The data thus collected was computed on Statistical Package for Social Sciences (SPSS) version 10.0.5 (Chicago, IL, USA). Results were expressed as mean and standard deviation for all variables, median and range were calculated for variables with skewedness. Categorical data was expressed as a percentage. The respondents were then divided into groups based on the institute they belonged to and the years of postgraduate experience. These groups were comparable in terms of categorical variables, and comparative analysis between these groups was carried out using independent sample Student's t-test in the case of two groups, one way ANOVA in the case of three groups, and chi square for categorical variables. Significance of results was taken at p-value <0.05, with confidence interval of 95%.

RESULTS

Out of the 85 general surgeons approached, 84 filled the questionnaires (response rate is 99%). 65 (77.4%) respondents were male and 19 (22.6%) were female. The mean (and standard deviation) years since postgraduation were 7.7 (± 7.3) years, ranging from one year to 33 years, with a median of 5.0 years. Mean (and standard deviation) years since post-graduation of male surgeons was 8.3 (± 7.8) years and for female surgeons it was 5.7 (± 4.5) years. The qualifications and institutions of respondents are summarised in Tables I and II.

In response to the question: "Do you recommend the use of prophylactic antibiotics?", 60 (71.4%) respondents reported routine use of prophylactic

antibiotics in all inguinal hernia repairs, four (4.8%) claimed not to use antibiotics at all, and 20 (23.8%) reported using antibiotics only in mesh repair. First-generation cephalosporin was found to be the most popular antibiotic, chosen by 55 (65.5%) respondents, followed by third generation cephalosporin, chosen by 12 (14.3%) respondents (Table III).

In response to the question: "Which type of anaesthesia do you prefer?", 34 respondents (40.5%) quoted "spinal anaesthesia", 24 (28.6%) quoted "general anaesthesia", 16 (19%) had no preferences, and 10 (11.9%) chose "local anaesthesia" as their preferred type of anaesthesia. In response to the question: "Do you prefer the procedure to be performed as a day care or inpatient procedure?", 46 (54.8%) general surgeons chose to perform the procedure as a day care procedure and 38 (45.2%) chose to perform it on an inpatient basis.

In response to the question: "Which type of repair do you prefer?", 49 general surgeons reported mesh repair as their preferred type of repair. The response of the rest of the surgeons is stated in Table IV. The surgeons who did not choose mesh as the preferred method of elective inguinal hernia repair (n=35), were further asked to elaborate on the reasons for their preference. The following reasons were mentioned: high cost (20 surgeons), high risk of infection (ten surgeons), no advantage in terms of results (three surgeons) and personal preference (two surgeons). In the last question, surgeons were asked if they would recommend the laparoscopic approach to hernia repair, to which 60 (71.4%) replied no, and 24 (28.6%) replied yes.

The respondents were then divided into two comparable groups, namely: surgeons working in the private university-run teaching hospitals and surgeons serving government-run university teaching hospitals (Table Va). The groups were compared, and no statistically significant difference was found between the groups in terms of choice of anaesthesia (p=0.24), or whether the procedure was performed as inpatient or day care procedure (p=0.54). With regard to the laparoscopic approach to elective inguinal hernia repair, respondents belonging to both groups showed similar preferences (p=0.27). Statistically significant differences were that the respondents belonging to group one were found more likely to choose mesh as their preferred method of hernia repair (p=0.007), however, they were also found less inclined towards the use of prophylactic antibiotics (p=0.05).

Respondents were then categorised based on postgraduate clinical experience, namely: surgeons with postgraduate experience of less or more than ten

Table III. Preferred choice of antibiotics for prophylaxis (n=84).

Preferred prophylactic antibiotic	Number of respondents	Percent
First-generation cephalosporin	55	65.5
Second-generation cephalosporin	3	3.6
Third-generation cephalosporin	12	14.3
Co-amoxiclav	10	11.9
No antibiotic	4	4.8
Total	84	100

Table IV. Preferred type of inguinal hernia repair (n=84).

Preferred type of repair	Number of respondents	Percent
Mesh	49	58.3
Darning	16	19.0
Bassini	10	11.9
Bassini modified	9	10.7
Total	84	100

Table V. List of subgroups according to institution and experience.

a. Institution-based grouping

	Group 1	Group 2
Institutional categorisation	Private hospitals	Government hospitals

b. Experience-based grouping

	Group 1	Group 2	
Experience-based grouping 1			
Years since postgraduation	< 10	≥10	
Experience-based grouping 2	Group 1	Group 2	Group 3
Years since postgraduation	≤5	>5-<10	≥10

years (Table Vb). The two groups were compared, and no statistically significant difference was noted with regard to the use of prophylactic antibiotics, type of anaesthesia and type of repair, although respondents with more than ten years of postgraduate experience were more likely to perform inguinal hernia repairs on an inpatient basis (p=0.045). For further subgroup analysis, these respondents were then divided into three groups: based on postgraduate experience of

less than or equal to five years, six to 10 years and more than 10 years, respectively (Table Vb). On comparing the three groups, the only statistically significant observations were that the respondents with postgraduate experience between five and ten years were the least likely, and respondents with more than ten years of postgraduate experience were the most likely, to use prophylactic antibiotics before routine hernia repairs ($p=0.009$).

DISCUSSION

Documentation of local practices is important. It records not just what is being done, but also what is not being done, and thus helps to bring about change and improvement. A number of researchers have conducted surveys to study the trends in the management of groin hernia repair in their own respective countries^(1,4-6). We conducted this study to identify and document the elective inguinal hernia repair practices of general surgeons in major institutes in Karachi, Pakistan. We believe that this extensive survey, involving 84 practising general surgeons in Karachi, would not only enable us to compare our practices with the international literature and established guidelines, but would also be of use when studying the patterns of change through a similar survey conducted perhaps five years later. This survey would also help in exploring why certain practices of proven superiority, such as the use of mesh in inguinal hernia repairs is not being practised here and how this can be changed. This survey may not be the true reflection of surgical practice in this city, as a large number of surgeons who practise outside the institutes are not included in the study. However, as most of the surgeons working in the city were trained in one of these institutions, we can assume that their practices would be guided on similar lines.

Interpretation of literature on different techniques of inguinal hernia repair is made difficult by the large number of described methods of repairs and occasional modifications in technique⁽⁷⁾. The tension-free Lichtenstein repair has revolutionised the management of hernias and is now the technique of choice for inguinal hernia repairs⁽⁸⁻¹⁰⁾. In many countries, the majority of hernia repairs are performed using mesh^(1,5,6,11). However, the same trend is not noticed in all countries, even in a few Western nations. DesCoteaux and Sutherland reported the results of a similar questionnaire-based survey conducted in Canada, in which only about 36% of surgeons in Canada chose mesh as their preferred means of hernia repair⁽⁴⁾. In our study, 58.3% of the 84 surgeons preferred to perform mesh repair in

primary inguinal hernias, although this figure only represents the percentage of surgeons who chose mesh, and not necessarily the proportion of hernias in the city that are repaired with mesh. Nonetheless, this finding is quite encouraging, given the fact that despite better results and greater worldwide acceptance, mesh repair is considered a relatively expensive means of hernia repair. The majority of our patients fall below the poverty line, are cost conscious, and require effective counselling for this added expenditure. This is also evident from the subgroup analysis between private and government-run hospitals which revealed statistically significant preference for mesh in private hospitals ($p=0.007$).

Understandably, 20 of the 35 surgeons who did not choose mesh did so due to the high cost of the prosthesis, a problem that can easily be sorted out by local manufacturing and other means. Cost reduction may also be achieved by early discharge of patients or more frequent utilisation of day care surgeries, which is ideally suited for such procedures^(12,13). Interestingly, 54.8% of the surgeons in our study preferred not to keep the patients admitted overnight, although 45.2% preferred otherwise. We find it rather difficult to explain this preference. On subgroup analysis which showed that surgeons with more than ten years of postgraduate experience was identified as the group more likely to keep patients admitted overnight, a trend towards changes in practice is indicated ($p=0.045$). This is encouraging as groin hernia repair is widely accepted as a routine day case procedure, and centres with referral facilities are even exploring "one-stop" hernia surgeries, with diagnosis, treatment and discharge all on the same day, thereby minimising hospital visits and cost⁽¹⁴⁾.

Inguinal hernia repair is an elective clean operation and the postoperative wound infection should be very low. The reported postoperative wound infection rate is between 0% and 9%. Whether prophylactic antibiotics actually help in reducing postoperative wound infection after mesh repair is still debatable, especially in low-risk patients⁽¹⁵⁻¹⁷⁾. A single dose of intravenous antibiotics is nevertheless recommended, especially in the case of open mesh repair⁽¹⁸⁾. Local data reported in 2003 by Pishori et al suggested a surgical wound infection rate after hernia repairs to be higher than the NNIS system, although the data came from a single institute⁽¹⁹⁾. Clinical audit is not routine in most other hospitals in Karachi. Our study has demonstrated a very large number of surgeons (95.2%) using prophylactic antibiotics for hernia repair which may be attributed to the relatively high infection rate, assuming that these antibiotics may reduce the postoperative infection rates, or to

the relatively low cost of antibiotics in our country, where the average cost of the antibiotics mentioned by the respondents is approximately two US dollars. Furthermore, in government-run teaching hospitals, these antibiotics are mostly prescribed free of cost for the patients either through the government or non-government organisations. Not surprisingly, surgeons belonging to these government-run hospitals were found more inclined towards the use of prophylactic antibiotics, compared with surgeons working in private hospitals ($p=0.05$).

Choice of anaesthesia for inguinal hernia repair remains controversial, and rests to a large extent on the preference of either the surgeon or the patient. Local anaesthesia has been described in the literature as the optimal technique, however, general or spinal anaesthesia is more commonly used in practice⁽²⁰⁻²²⁾. This can also be seen in our study where spinal anaesthesia was preferred by most (40%) and local anaesthesia was the least preferred (12%). 16 out of 84 (19%) surgeons had no preferences in the type of anaesthesia used and they would leave the choice to the patient or anaesthetist. It is seen that when offered the choice of anaesthesia, patients commonly elect or insist upon general or spinal anaesthesia⁽²³⁾. In our study, no differences in the choice of anaesthesia were noted when groups were divided on the basis of experience or institute.

Totally extra-peritoneal (TEP) laparoscopic inguinal hernia repair has shown results comparable to other methods of hernia repair in terms of hospital stay, postoperative infection, and postoperative pain. The procedure is gaining popularity, and is also being performed as a day case procedure⁽²⁴⁾. Like a lot of other laparoscopic procedures worldwide, it has been adopted by only a select group of surgeons, although its indication in bilateral recurrent hernias is well established. In our study, only 28.6% of surgeons recommended the laparoscopic approach to hernia repair, which was perhaps expected as laparoscopic surgery in Pakistan has not shown significant development beyond cholecystectomy. Interestingly, the respondents showed considerable homogeneity in response to this question and no differences were noted between groups.

On analysing subgroups based on five, ten and more than ten years of postgraduate experience, the only statistically significant observations were that the respondents with postgraduate experience between five and ten years were the least likely and respondents with more than ten years of postgraduate experience were the most likely to use prophylactic antibiotics before routine hernia repairs ($p=0.009$). This finding is rather difficult to interpret and though

of statistical significance, is unlikely to be of any clinical significance due to the small number of respondents in each of the three subgroups. It is nevertheless being reported for future reference and possible validation.

In conclusion, various aspects of management of inguinal hernias are still determined by the preference of the operating surgeon. Day case management of hernia repairs and the routine use of prophylactic antibiotics, commonly first-generation cephalosporin, were the practice of the majority of surgeons, although differences were noted in specific surgeon groups. Despite proven superiority, mesh repair is still not the repair of choice for a large proportion of surgeons, especially those working in government-run hospitals, mainly due to the high cost of prosthesis. Laparoscopic repair of inguinal hernias was not supported by the majority of surgeons. Because of large variations in practice, the authors recommend a more extensive nationwide survey to further validate these observations.

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APPENDIX

Study Questionnaire

Qualifications: _____

Year of postgraduation: _____ Specialty: _____

Institution: _____

In the operative management of an uncomplicated inguinal hernia, in an otherwise healthy young man:

Do you recommend the use of prophylactic antibiotics?

- Never
 Only in mesh repair
 Routinely
 If yes, please also mention your antibiotic of choice: _____

Which type of anaesthesia do you prefer?

- General
 Spinal
 Local
 No preferences

You prefer the procedure to be performed in:

- Day care
 In-patient basis

Which type of repair do you prefer?

- Bassini
 Bassini modified
 Shouldice
 Darning
 Mesh
 Other (please specify): _____

You choose mesh repair because:

- It is easier to perform
 It gives better results
 It is easier to teach
 It is less time consuming
 Personal preference
 Others (please specify): _____

You do not choose mesh repair because:

- It is expensive
 It carries high risk of operative failure
 It carries high risk of post-op infections
 It doesn't give any better results
 Personal preference
 Others (please specify): _____

Would you recommend the laparoscopic approach to hernia repair (Please justify)?

- Yes _____
 No _____

Thank you very much.