Indirect inguinal hernia: the implication of occupation in a semi-urban centre

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SUMMARY

Inguinal hernia is the commonest anterior abdominal wall hernia and increased intra-abdominal pressure is one of the risk factors of inguinal hernia formation. The objective of this study was to determine the effect of occupation on types of indirect inguinal hernia and its associated posterior wall defect in adult male patients in a semi-urban hospital. This was a prospective descriptive hospital based study conducted between February 2004 and February 2006 among ninety-two adult male patients. Patients were classified into three work groups based on their exposure to heavy lifting: the unskilled, the artisan and the professional. Types of indirect inguinal hernia were classified intra-operatively based on distal extent of fundus of the hernia sac into: bobunocoele, funicular and inguinoscrotal and their associated posterior wall defects was classified using Nyhus classification. All data were analysed using SPSS version 15 for windows with level of significance put at $p < 0.05$ for nonparametric tests. There were 38 Unskilled, 18 Artisan and 36 Professional. Comparing levels of occupation with types of indirect inguinal hernia was not statistically significant ($x^2 = 1.09$, $df = 2$; $p = 0.580$). However, comparing levels of occupation with the posterior wall defect was statistically significant ($x^2 = 7.48$; $df = 2$; $p = 0.024$); follow-up tests evaluating pairwise differences between the three levels of occupation and the posterior wall defect only show significant difference between the Unskilled and the Professional ($p = 0.008$). Levels of occupation in our environment appears unrelated to the types of indirect inguinal hernia, however, it has an influence on the degree of posterior wall defect in the Unskilled. There is a need to evaluate the optimal convalescent period in this group of workers post surgery, to allow for adequate wound healing before returning to active work; especially, where tension repair is still the main modality of treatment.

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Introduction

Inguinal hernia is the commonest anterior abdominal wall hernia [1-3]; causes can either be congenital or acquired. Acquired causes are multi-factorial and can either be due to inherent genetic fascia weakness following impaired hydroxylation of hydroxylproline in type I collagen or secondary to patients' factors such as smoking, use of steroids and chronically increased intra-abdominal pressure[4]. Increased intra-abdominal pressure as a risk factor of hernia formation depends on the amount of stress to which the shutter mechanism of the inguinal canal is subjected to and the possibility of this increased intra-abdominal pressure to overload this protective shutter mechanism [4]. The failed protective mechanism leads to a widened internal ring with or without a defect in the transversalis fascia. Understanding the genesis of inguinal hernia is important in knowing the best treatment modality and prevention of recurrence. The objective of this study was to determine the effect of occupation on type of indirect inguinal hernia and its associated posterior wall defect in adult male patients in a semi-urban hospital. This study is based on the popular impression in our environment that acquired inguinal herniation is as result of heavy lifting at work.

Patients and methods

This was a prospective descriptive hospital based study conducted between February 2004 and February 2006 among ninety-two adult male patients that presented with indirect inguinal hernia at the surgical outpatient clinic of Federal Medical Centre, Owo, Ondo State. The hospital is a tertiary health institution situated in the south-western part of Nigeria and serves the health needs of Ondo and

three neighbouring States. Simple random sampling of patients presenting with indirect inguinal hernia was done and the exclusion criteria were: ages below 20 and above 70 years, female gender, bilateral indirect inguinal hernias and associated co-morbidity.

Patients were classified into three work groups based on their exposure to heavy lifting: the unskilled, the artisan and the professional. All the patients had open hernia surgery. Types of indirect inguinal hernia were classified intra operatively based on distal extent of fundus of the hernia sac into bobunocoele, funicular and inguinoscrotal, and their associated posterior wall defects was classified using Nyhus classification [5-7]. All data were analysed using SPSS version 15 for windows using descriptive statistics and nonparametric tests with the level of significance put at $p < 0.05$.

Results

Ninety- two male patients with indirect inguinal hernias met the inclusion criteria for the study; their mean age was 47.7years with age range of 21 – 70 years. Their age classification is as shown in table 1. Forty-five of these ninety-two patients presented with left sided hernias while the remaining forty-seven presented with right sided inguinal hernias. Work groups distribution of affected side and the types of hernias is shown in Table 2.

Nonparametric test for several independent samples comparing level of occupation with types of indirect inguinal hernia was not significant ($x^2 = 1.09$, $df = 2$; $p = 0.580$). Distribution of posterior wall defect according to the level of occupation is as shown in table 3; nonparametric test for several independent samples comparing level of occupation with the posterior wall defect was significant ($x^2 = 7.48$; $df = 2$; $p = 0.024$). Result of follow-up tests conducted to evaluate pairwise differences between the three levels of occupation and the posterior wall defect using nonparametric two independent- samples test is as follows:

- Significant difference between the Unskilled and the Professional ($p = 0.008$),
- Non significant difference between the Unskilled and the Artisan ($p = 0.158$) and,
- Non significant difference between the Artisan and the Professional ($p = 0.378$).

Table 1. Work Groups Age Classification

	Age in decade					Total
	21 - 30	31 - 40	41 - 50	51 - 60	61 - 70	
Unskilled	0	3	8	17	10	38
Artisan	4	4	6	2	2	18
Professional	13	8	6	6	3	36
Total	17	15	20	25	15	92

Table 2. Affected Side And Type Of Hernia

Characteristics	Distributions		
Affected side ($n = 92$)	left ($n = 45$),	right ($n = 47$)	
Unskilled ($n = 38$)	left ($n = 23$),	right ($n = 15$)	
Artisan ($n = 18$)	left ($n = 5$),	right ($n = 13$)	
Professional ($n = 36$)	left ($n = 17$),	right ($n = 19$)	
Type of hernia ($n = 92$)	bobunocoele ($n = 1$),	funicular ($n = 42$),	inguinoscrotal ($n = 49$)
Unskilled ($n = 38$)	bobunocoele ($n = 0$),	funicular ($n = 16$),	inguinoscrotal ($n = 22$)
Artisan ($n = 18$)	bobunocoele ($n = 0$),	funicular ($n = 8$),	inguinoscrotal ($n = 10$)
Professional ($n = 36$)	bobunocoele ($n = 1$),	funicular ($n = 18$),	inguinoscrotal ($n = 17$)

Table 3. Nyhus classification Of Posterior Wall Defect

	Posterior wall defect			Total
	type II	type III B	type IV B	
Unskilled	2	36	0	38
Artisan	6	10	2	18
Professional	19	11	6	36
Total	27	57	8	92

Discussion

Inguinal hernia is the commonest anterior abdominal wall hernia with its associated complications such as obstruction and strangulation[1-3, 8]; more so, in our environment where late presentation or non presentation till the time of complication is very common[8, 9]. The peak age of presentation of adult inguinal hernia varies from 48 to 54years in advanced countries [10-12] which is comparable to peak age of 49 to 54years reported in developing countries[8, 13]. In our study the mean age of presentation was 47.7years, which agrees with similar report from Ilesa in Nigeria [8].

Knowledge about the predisposing factors to inguinal herniation is important in preventing or reducing the incidence or prevalence of the disease entity; previous report by Kang in United State and Carbonell in Spain in their survey studies on the influence of heavy lifting about incidence of hernia, found a significant relationship between manual work and increased incidence of inguinal hernia [14, 15]. In our study, the type of inguinal hernia (bobunocoele, furnicular and inguinoscrotal) is not significantly related to the degree of heavy lifting; however, the extent of posterior wall defect is significant in this study between the Unskilled and the Professional.

Patients discovered to have Nyhus class III or IV posterior defect at surgery are better managed by tension free hernioplasty either by open or laparoscopy method [16]. However, in our environment where hernioplasty is not commonly being practiced because mesh is not readily available or affordable: open tension repair is still the commonly practiced modality of treatment with a higher rate of recurrence as compared with tension free repair. Non significant finding in the posterior wall defects between the Artisan and the professional group might be due to the fact that, the work processes of Artisans are automated or partially automated thereby reducing amount of heavy lifting approximately close to that of the professionals. Perhaps, if the unskilled manual workers can have some of their duties automated by mechanical means especially for the peasant farmers and other unskilled workers; there may be a reduction in the extent of posterior wall defect that can still be managed by tension repair still commonly practiced in our environment.

Conclusion

Occupation seems not to have influence on the types of indirect inguinal hernia in this study; however, it influences the extent of posterior wall defect especially in manual worker. There is a need to evaluate the optimal convalescent period in this group of workers post surgery, to allow for adequate wound healing before returning to active work; especially, in our environment where tension repair is still the main modality of treatment. This might be necessary in preventing recurrence.

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