

STRANGULATED INGUINAL HERNIA IN ADULT MALES IN KUMASI

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DOI <http://dx.doi.org/10.4314/gmj.v48i2.8>

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Conflict of Interest: None declared

SUMMARY

Background: The complications of untreated inguinal hernias are common surgical emergencies in adult Ghanaian men.

Objective: To describe the epidemiology of strangulated inguinal hernia in adult males in Kumasi.

Method: From the hospital records the age and sex of all male adult patients treated for strangulated inguinal hernia were recorded at the Komfo Anokye Teaching Hospital(KATH), the University Hospital (UH), the Seventh Day Adventist Hospital (SDAH) and the Kumasi South Hospital (KSH) for the period January 2007 to December 2011 inclusive. The total number of inguinal hernia repairs from all four facilities was also recorded. The annual incidence of strangulated inguinal hernia and the hernia repair rates were estimated using the 2010 population data.

Results: Five-hundred and ninety-two cases of strangulated inguinal hernia were treated over the five years. The incidence of strangulated inguinal hernia was 0.26%. A total of 2243 inguinal hernia repairs were performed and 26.4 % of these repairs were for strangulation. The total number of inguinal hernia repairs averaged 77.3 repairs per 100 000 adult males per year and the elective repair rate was low at 0.9%.

Conclusion: There is the need to increase the levels of elective repair of inguinal hernia in Kumasi.

Keywords: Strangulated inguinal hernia: incidence: inguinal hernia repair rates: adults: Kumasi.

INTRODUCTION

In our practice in Kumasi, strangulated inguinal hernia is a common cause of acute surgical admission for abdominal emergency second only to abdominal pain.¹ Strangulated inguinal hernia is the most important cause of acute small bowel obstruction accounting for 49% of the cases studied in Kumasi.² Surgery for strangulation is associated with 5-10 fold increase in morbidity and mortality.³⁻⁴ Most (65%) of the inguinal hernia surgery output from Kumasi is for strangulation.³ Complications that result from untreated strangulated inguinal hernia are serious and life-threatening.⁵

Published data on epidemiology of inguinal hernia from Ghana is scanty. Over three decades ago Belcher and his colleagues reported that the prevalence of inguinal hernia in adult males in rural Ghana was 7.7%.⁶

This paper reports the annual incidence of strangulated inguinal hernia in adult males in Kumasi. The inguinal hernia surgery output from Kumasi is presented to highlight the gap between the need for and output of surgery for inguinal hernia disease in Kumasi. The findings of the study are compared with previous published data. It is expected that data obtained from this study should increase the level of awareness of a serious disease that is largely preventable. This is a retrospective study.

METHODS

Sources of data and data collection

Kumasi metropolis is the second largest city in Ghana. It is located 250 kilometres north of Accra the capital city and has a population of 2,035,064.⁷ There are five health care facilities in Kumasi that offer surgical services on daily basis: The largest is the Komfo Anokye Teaching Hospital (KATH). Data collection on strangulated inguinal hernia began with the operating room log books. The information recorded was augmented and cross-checked with records of daily emergency admissions and discharge summaries from the wards. Data recorded included the numbers of operations performed as well as the age and sex of the patients operated upon for all male adult patients admitted and treated for strangulated inguinal hernia.

In addition all cases of elective inguinal hernia repair operations were recorded. Similar data was obtained in the same manner from the University Hospital (UH), the Seventh Day Adventist Hospital (SDAH) and the Kumasi South Hospital (KSH) for the period January 2007 to December 2011 inclusive.

Data from four facilities were found usable and hence pooled together and analysed for numbers of operations performed and for age-specific distribution of strangu-

lated inguinal hernia. The 2010 population data on Kumasi Metropolis including the population of adult men was obtained from the Ghana Statistical Services website.⁷⁻⁸

Data analysis and computations

According to the Ghana Statistical Services the population of males in Ghana is 12,024,845 and the population of males aged 15 years and above is 7,225,901: the population of males 15 years and above constitutes 60% of the total male population. The total population of males in Kumasi is 972,258 and 60% of 972,258 is 583,354.8. The population of adult males 15 years and above in Kumasi is, therefore, 583,354.8. The total number of inguinal hernia operations that were performed during the study period and the proportion of the operations done for strangulated inguinal hernia from each health facility were determined. Using the estimates of Belcher and his colleagues⁶ the prevalence of inguinal hernia in adult males in Kumasi was calculated as 44,917.6: (7.7% of 583,354.8).

The figure 44,917.6 was used as the denominator to calculate the incidence and the repair rates and the figure 583,354.8 was used as the denominator to calculate the output of inguinal hernia surgery from Kumasi expressed as the number of repairs per 100,000 adult males. The SPSS version 12 software was used to describe and analyse the data.

RESULTS

Incidence of strangulated inguinal hernia

A total of 592 cases of strangulated inguinal hernia were seen and treated in adult males during the five years of the study in all four health facilities. Of the 592 cases 469 or 79% were recorded at KATH, 94 or 16% at SDA, 18 or 3% at UH and 11 or 2% at KSH. A total of 2243 inguinal hernia repairs were performed in adult males at all four facilities over the five years of the study (Table 1). The proportion of repairs that were performed for strangulation was 26.4% (Table 1).

The age-group of peak incidence of strangulated inguinal hernia was in the 25-29 followed closely by the 30-34 age groups. Twenty-five percent of all the patients were aged between 25 and 34 years (Figure 1). The incidence of strangulated inguinal hernia for each year of study is shown in Table 2. Over the five year -study period the average annual incidence of strangulated hernia was 0.26%. Less than 1% of adult males in Kumasi who have inguinal hernias reported with strangulation during each year of the study period.

Inguinal hernia Surgery Output in adult males

Table 1 shows the number of inguinal hernia repairs (emergency and elective) performed in each health facility during the study period.

Table 1 Distribution of elective and emergency repairs of inguinal hernia by to health facility

Health Facility	Elective Surgery	Emergency Surgery	Total	% Emergency
KATH	459	469	928	50.5
SDA	728	94	822	11.4
UH	253	18	271	6.7
KSH	211	11	222	5.0
Total	1651	592	2243	26.4

Table 2 Strangulated Inguinal Hernia (SIH) in Adult males in Kumasi: 2007-2011

Year	No. SIH	Incidence of SIH (%)	No. SIH per 100,000 adult males.
2007	142	0.32	24.5
2008	142	0.32	24.5
2009	89	0.19	15.5
2010	113	0.25	19.5
2011	106	0.23	18.3

The proportion of elective to emergency repairs that were performed varied according to the health facility. At KATH half (50.5%) of the repairs were performed for strangulation. Over all 26.4 % percent of the repairs were done for strangulation. The inguinal hernia repair rates and output of inguinal hernia surgery during the study period are shown in Table 3.

Table 3 Inguinal surgery output from Kumasi 2007-200-11

Year of study	Elective repair rates	Total repair rates	Total repairs per 100,000 adult males
2007	0.52 (232)	0.83 (374)	64.5
2008	0.74(333)	1.05(475)	81.9
2009	0.78 (351)	0.98(440)	75.9
2010	0.87(392)	1.12(505)	87.1
2011	0.76(343)	1.0%(449)	77.4

The figures in parenthesis are the numbers of inguinal hernia repairs.

Trends Over Time

The incidence of strangulated inguinal hernia did not reduce over the study period (Table 2) indicating that the rate of elective repairs was too low to produce a reduction in the incidence of complications: strangulations.

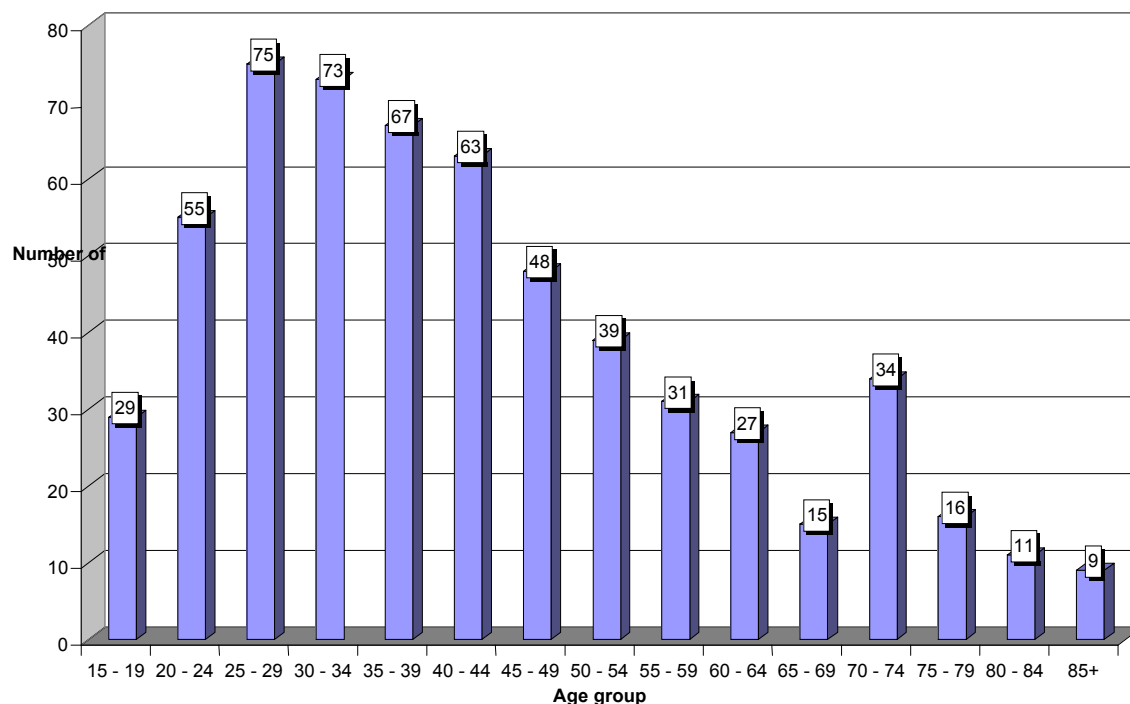


Figure 1 Distribution of patients with strangulated inguinal hernia by age

DISCUSSION

In Kumasi, cases of strangulated inguinal hernia in adult males were seen and treated in all major health facilities studied, (Table 1). The bulk of the workload of emergency repairs was at KATH where over three-quarters (79%) of all cases of strangulated inguinal hernia were treated (Table 1). KATH is the only hospital in the Kumasi metropolis that has the human resource capacity and the required facilities to offer 24 hours of surgical services.¹ In a recent report on the epidemiology of acute appendicitis over half (64%) of all appendicectomies performed in Kumasi were at KATH.⁹ Similar findings were reported from Accra where over half of the cases of appendicectomies studied were performed at the Korle Bu Teaching Hospital (KBTH).¹⁰ There is a need to increase the capacity of all the hospitals in the metropolis to provide 24 hours of emergency surgical services. This will free the teaching hospitals to concentrate on teaching and training.

Over a decade ago Ohene-Yeboah^{3,11} reported that over two-thirds of hernia repairs in adults at KATH were performed as emergency operations. In the present series 50.5% of inguinal hernia repairs at KATH were performed for strangulation Table 1.

This figure when compared to the previous one of 65% shows a decrease. However it is still unacceptable that nearly half of the inguinal hernia repairs in KATH were performed for strangulation: an indication that not enough elective repairs are done in KATH. Over all the proportion of inguinal hernias that were repaired for strangulation in this study was 26.4% (Table 1). Similar figures have been reported from studies in Nigeria (25%)¹², Sierra Leone (33%)¹³ and Uganda (76%)¹⁴. These findings all indicate that in Africa a large number of inguinal hernias present to hospital as emergencies. In contrast reports from Europe and America indicate that only 1-3% of hernias present to hospital as emergencies.¹⁵⁻¹⁶ This is an important difference in the epidemiology of inguinal hernia in Africa as compared to that in Europe.¹¹

The explanation for the differences in presentation of inguinal hernia is that the rate of elective repair of inguinal hernia in Ghana or Africa is too low as compared with rates in Europe and America.

Throughout the study period inguinal hernia repair rates remained low at less than 1% (Tables 2 and 3). The result of such very low repair rates is that many

men in Ghana walk around with long-standing untreated inguinal hernias.¹⁵

There are no previous studies in Ghana or Kumasi that report the reasons patients with inguinal hernia do not get an elective repair or why repair rates are so low. The current study was not designed to reveal these reasons. One possible reason inguinal hernias are not repaired until strangulation occurs may be that patients are unable to access surgical care in the public or government health facilities for various reasons. Castro-Leal¹⁷ in a review of public spending on health care in Africa stressed on the impact of access and opportunity costs on decision making to access health care and Lavy and Germain¹⁸ found that halving the distance to public health facilities in Ghana increased their use among the population at large by an estimated 96%. Distance to health facility and cost of travel are important factors in decision making to seek surgical care for an inguinal hernia and can be a barrier to elective repair as was in the case Sierra Leon.¹³

Grime and his colleagues recently published a review of barriers to surgical care in low-income and middle-income countries.¹⁹ Some of the key barriers were cultural such as fear of undergoing surgery, fear of anaesthesia and fear of bad or unfavourable outcomes as a result of surgery. There is a view that the efficiency of a health service is the extent to which it is capable of reducing preventable emergencies, of which inguinal hernia complications (such as strangulation) are a very good example.²⁰ It may be argued that whatever the reasons for adult males in Kumasi and beyond walking around with large untreated inguinal hernias the ability of the existing health care system to identify and address these reasons or barriers constitutes a measure of good performance and efficiency.²⁰⁻²¹

It is estimated that worldwide inguinal hernia repair rates vary from 100 to 300 per 100 000 population per year.¹⁶ There are no previous figures from Ghana. Grimes estimated that the inguinal hernia repair rate in district hospitals in Sub Saharan Africa was 30 per 100 000 population per year²² and Beard confirmed this figure (in the estimate of inguinal hernia epidemiology) for Ghana.²³ In the current series an average of 77.4 inguinal hernia repairs per 100 000 adult males in Kumasi per year is higher than estimated for rural Sub Saharan Africa and for Ghana. This is expected as central hospitals and tertiary health facilities such as KATH perform many more operations as compared with district hospitals²⁴.

Over the five-year period of study the number of patients treated for strangulated inguinal hernia changed very little (Table 2). The explanation here is that the

number of elective repairs (77.4 per 100 000 adult males per year) and the elective repair are too low to reduce the occurrence of strangulation.

This study has some limitations that must be addressed. The authors acknowledge that there may be other health facilities in Kumasi where an occasional inguinal hernia surgery is performed. These facilities were not captured in the current study. The exclusion of the figures from these facilities may produce an underestimation of the numbers of operations.

The prevalence of inguinal hernia in adult males in Kumasi is not known. The estimated prevalence based on data from previous studies from Accra may not be accurate for Kumasi. Also as a retrospective study poor documentation of the records in the theatres and wards is likely to lead to an underestimation. In spite of these limitations the results of the study remain valid as these findings reflect the current status of inguinal hernia surgery in Kumasi. A prospective study with careful documentation of data is needed.

CONCLUSION

In Kumasi strangulated inguinal hernia is a common surgical emergency in adult males. The output of inguinal hernia surgery in Kumasi is too low to prevent the occurrence of strangulation. Increased and sustained efforts are needed to raise the current low levels of elective repair. It is expected that the health care system in Ghana will provide the necessary infrastructure including the required surgical capacity to meet the need of a common surgical disease.

ACKNOWLEDGEMENTS

The authors wish to acknowledge the contribution of Dr Walid Mohammed of the SDA hospital in Kumasi. We thank the theatre staff of the University and Kumasi South hospitals for their help in collecting the data used for this study.

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