

# Longstanding hydrocele in adult Black Africans: Is preoperative scrotal ultrasound justified?

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## ABSTRACT

**Background:** Longstanding hydrocele is very common among adult Black Africans. Preoperative scrotal ultrasound is widely used for adult patients presenting with hydrocele, with the main aim to rule out more serious underlying pathologies like malignancy or testicular torsion. This paper analyzes the findings and the necessity of automatic ordering of scrotal ultrasound in cases of longstanding hydrocele in adult Black Africans. **Materials and Methods:** 102 consecutive patients with longstanding scrotal hydrocele were investigated clinically and all patients also had routine preoperative scrotal ultrasound. **Results:** Overall, none of our patients had any serious underlying pathology associated with their hydrocele. 97% of the patients had simple hydrocele on ultrasound. Hydrocele is more common on the right ( $P=0.04$ ) and is more bilateral in elderly patients ( $P=0.0002$ ). **Conclusions:** Routine preoperative scrotal ultrasound does not seem to be justified in longstanding hydroceles. This is especially important considering the fact that most hydroceles are benign in origin and nature.

**Key words:** Adult hydrocele, Black Africans, health care cost, testicular pathology, ultrasonography

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## INTRODUCTION

Adult hydrocele is a very common urological disease in most of the sub-Saharan African countries, with a reported incidence of up to 20–28% in some lymphatic filariasis endemic communities.<sup>1,2</sup> The associated economic burden involved with the treatment of hydrocele can be significant in these mostly poor resource economies.<sup>3</sup> Scrotal ultrasound is recommended in adult men with hydrocele as part of the diagnostic work-up.<sup>4,5</sup> This recommendation is mainly based on the need to rule out more serious pathologies like testicular/paratesticular cancer and testicular torsion. Testicular cancer, though the most common solid tumor in young men, is generally a rare disease, and moreover, is extremely rare among Blacks in comparison to Whites.<sup>6-8</sup> The estimated incidence in Black Africans for both testicular and paratesticular neoplasms ranges from 0.7 to 0.8 per 100,000 persons per annum

and this includes pediatric and adult cases.<sup>7,9</sup> Furthermore, the association of testicular/paratesticular cancer with hydrocele in Black Africans is unknown, but such a rare association in other races has been reported sporadically as case reports. Specifically, malignant mesothelioma of the tunica vaginalis, sarcomas, and other rare testicular/paratesticular neoplasms have been noted in these case reports.<sup>10-13</sup> Testicular torsion, on the other hand, usually presents as an acute event and on strong suspicion should preferably be treated surgically without diagnostic imaging delay. Availability of ultrasound machine and radiologists is still limited in many rural health facilities across Africa. Hence, the observed trend of automatically sending patients with longstanding hydrocele for scrotal ultrasound, with some of these patients traveling far from their localities for the same seems questionable.

Since January 2004 to May 2009, the clinical history and findings on physical examinations and scrotal ultrasound of consecutive patients presenting with hydrocele were documented and correlated with operative findings. The aim of the study was to assess the added value of automatic ordering of scrotal ultrasound in cases of longstanding hydrocele in a low-resource environment where access to ultrasound machine may not always be readily available. There is no standing definition for “longstanding hydrocele in adults”. Hence, for this report, we define longstanding

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hydrocele in adults as a non-resolving hydrocele present over a period of months and usually associated with gradual increase in size.

## MATERIALS AND METHODS

This was a prospective study of consecutive series of 102 adult patients with hydrocele treated between February 2004 and May 2009. Patients with hydrocele secondary to ascites, congestive heart failure, of acute onset, those of negative transillumination that had prior scrotal aspirations and those of pediatric ages less than 18 years were excluded from this series. It is assumed that most of the cases were of idiopathic origin based on history and physical examinations and on the fact that the hospital catchment area of this study is mostly in the highlands and is considered a nonendemic region for lymphatic filariasis. However, all the patients as well as other inhabitants, as part of a national government protocol, have been receiving prophylactic treatment with the drug mectizan for lymphatic filariasis on a yearly basis.

Preoperative evaluation included detailed history of the disease and included questions on onset of illness, duration, presence of pain and other relevant medical history. All the patients had preoperative physical examination of the scrotum, lower extremities and inguinal regions, pen-light scrotal examination for transillumination, hemoglobin levels and scrotal ultrasound, with the main aim of diagnosing any associated intrascrotal pathology. Urinalysis was ordered if inflammatory process was suspected.

The patients went ahead to have hydrocelectomy using the partial excision technique with the remnant sac edges sewn together behind the cord. The main indication for surgery was the patient's desire mostly due to the large size of the hydrocele. Patients on discharge were recommended to return to clinic at 1 month and thereafter for any changes in symptoms.

Descriptive statistics were summarized for patient demographics. Binomial test was used to compare the probability of a patient having unilateral right-sided hydrocele versus the probability of developing unilateral

left-sided hydrocele. Also, Chi-square test was used to compare the rate of bilateral hydrocele between different age groups. Significance level was set at 0.05. SAS 9.2 (SAS Institute Inc., Cary, NC, USA) was used to perform these tests.

## RESULTS

The median age of the patients was 65 years (range 21–87 years). All the patients had longstanding hydrocele, with the time from patient's discovery of the illness to presentation ranging from 9 months to 8 years, with many of the patients unsure of how long they have had the illness but stated that it had been existing for years. Eighty-seven patients (85.3%) presented because of the very large sizes of the hydroceles and the increasing discomfort. Thirteen patients (12.7%) presented as the hydrocele made it more difficult for them to dress appropriately, while 2 patients (1.96%) associated the hydrocele with their new onset low back pain. Forty-three patients (42.2%) delayed their presentation to the hospital due to financial difficulties. Palpation of the scrotum revealed none tender cystic masses and no associated skin changes. The variations in presentation of the hydroceles are shown in Table 1. We found evidence suggesting that the probability of having unilateral right-sided hydrocele is higher than the probability of having unilateral left-sided hydrocele ( $P=0.04$ ). Older patients (50 and above) tend to have higher chance of developing bilateral hydrocele ( $P=0.0002$ ) [Table 2]. Large scrotal hydroceles were usually the norm rather than an exception. We defined a large hydrocele mostly based on symptoms and on visual assessment, and it includes hydrocele of a significant size causing any or all of the following symptoms: pulling weight of the mass, discomfort in walking, in wearing underwear, in sexual activity, and with partially or completely buried penis. All our large hydroceles were of the large scrotal type. On scrotal ultrasound, simple anechoic hydrocele was noted in 99 patients (97%), while 3 patients had loculated hydrocele. There were no testicular masses noted on scrotal ultrasound and this was confirmed on testicular palpation during surgery. Nine patients were found to have associated epididymal cysts; during surgery, the ones found in six elderly patients were

**Table 1: Patient's characteristics and variations in hydrocele presentation**

Patient age (years)	Number of patients	Unilateral hydrocele		Bilateral hydrocele	Communicating hydrocele
		Left-sided	Right-sided		
20–29	11	4	7		3
30–39	5	3	1	1	
40–49	6	2	4		
50–59	10	4	5	1	
60–69	24	5	7	12	
70–79	31	4	11	16	
80 and above	15	1	4	10	
Total	102	23	39	40	

**Table 2: Probability of having unilateral or bilateral hydrocele**

Variable	Unilateral left-sided	Unilateral right-sided	P value
Number of patients	23	39	0.04*
Variable	Bilateral hydrocele (%)	No bilateral hydrocele (%)	
Age group (years)			0.0002**
20-49	1 (4.55)	21 (95.45)	
50 and above	39 (48.75)	41 (51.25)	

\*P value is from binomial test; \*\*P value is from Chi-square test

removed while those found in three adolescents were left intact. One patient developed postoperative hematoma needing return to operating room for evacuation. There were no wound infections. None of the resected vaginal sacs sent to pathology showed any malignancy. There was no case of mortality.

## DISCUSSION

In this study, 102 patients were operated for scrotal hydrocele. None of these patients on preoperative ultrasound or on surgical exploration was diagnosed with a more serious underlying pathology. Hence, it seems that longstanding hydroceles are mostly benign in nature possibly in contrast to hydrocele of acute onset.

The importance of detailed history of illness and good physical examination cannot be underestimated. In particular, transillumination remains an important screening component of physical examination of patients presenting with scrotal masses. Transillumination requires a very bright focal light source in a dark room. All cases with abnormal findings on physical examination (including both palpation and transillumination) should have a scrotal ultrasound obtained. However, if the history of illness and physical examination is consistent with a simple uncomplicated hydrocele, then the scrotal ultrasound may be omitted provided that a very careful intraoperative assessment of the testicle and hydrocele sac is performed. If anything abnormal is noted at surgery, then pathological analysis of the resected tissue should be performed. Our study also suggests that there is no reason to get routine pathology in an uncomplicated case of hydrocele and this is potentially another way to reduce cost.

The most definitive treatment for hydrocele is surgery; however, many symptomatic sub-Saharan African patients live with this condition for years without surgery often due to financial constraints and lack of access to medical care. This situation unfortunately is common to most developing countries.<sup>14,15</sup> To reduce the cost of treatment especially for the patients, a critical review of the diagnostic work-up for patients with longstanding hydrocele among adult

Black Africans is appropriate. Scrotal ultrasound is one of the recommended diagnostic investigations for patients presenting with hydrocele, but automatic ordering should probably be avoided in longstanding cases. Majority of the Black Africans in need of surgery in general reside in the rural areas where the average income is low and as such affordability of surgical care difficult. Hence, it is not unusual for patients to stay long with their illnesses prior to seeking medical help. Most of the time, this delay is due to the need to save up the needed finance to enable accessing medical care. Streamlining diagnostic work-up to include only the most needed can only be of advantage to these patients and make their hospital expenditures cost-effective.

Most rural hospitals across Africa do not have adequate number of health care workers and retention of the few available ones is a daily struggle due to overwhelming workload and paradoxically lower remunerations compared to the bigger cities where the workload may be relatively less but is associated with better wages. In most of these rural areas, the ratio of patients to medical personnel is usually very high. Hence, changes in the delivery of medical care that do not compromise quality and safety but reduce the workload are always welcome. Reducing the number of patients queuing up for ultrasound studies or being referred to ultrasound diagnostic centers far from their communities, and in this case, for preoperative assessment of longstanding hydrocele seems appropriate as the risk of associated serious underlying pathology appears to be extremely low as suggested by this study.

This study shows some interesting characteristics of patients presenting with hydrocele to the urologic clinic [Tables 1 and 2]. The distribution of the incidence of hydrocele in this study showed two peaks: at ages 20-29 years and later 50 years and above, with a steady increase in incidence after the age of 50 years. Incidence of bilateral hydrocele seems to be very low below 50 years of age, while all the three cases of communicating hydrocele occurred in the age group of 20-29 years. Unilateral hydrocele seems to occur more frequently on the right side as compared to the left. Thomas *et al.* in their study also found scrotal hydrocele to be more common on the right.<sup>16</sup>

## CONCLUSION

With the very high prevalence of longstanding scrotal hydrocele across sub-Saharan Africa and the low incidence of associated serious underlying pathology, the automatic ordering of preoperative scrotal ultrasound does not seem to be justified and is of low yield. The probability of having unilateral right-sided hydrocele is higher than having left-sided hydrocele, while older patients tend to have higher chance of developing bilateral hydrocele.

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