

Abdominal gossypibomas in Togo: computed tomography scanner findings in a series of 15 cases

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Abstract

Background Gossypiboma or textiloma is an accidental retention of a textile in the operated area of the body. Abdominal surgery is the most responsible for these complication. The purpose of our study was to describe aspects observed in abdominal gossypibomas on CT-scan. Methods A retrospective study was conducted over 10 years (from January 1st, 2009 to December 31st, 2018) at the Teaching University Hospital of Lomé, including all the surgically confirmed cases of the abdominal gossypibomas who had abdominal CT-scan. Results Fifteen cases have been compiled, with a sex-ratio of 0.36. The average age of the patients was 34 years old. The initial surgery was an emergency intervention in 9/15 cases. It was a gynecological intervention in 11/15 cases. The incubation period of the symptoms related to textiloma was between 3 days and 3 years. On the CT-scan, a radiopaque marker was observed in 3/15 cases. An encapsulated and spongiform aspect in 6/15 cases. A cystic form was observed in 7/15 cases. We have noticed two cases of migration of the textiloma into a hollow organs.

Background

The term gossypiboma derive from the combination of two words: “gossypium”, in Latin which means cotton and “boma”, in Swahili, which means place of concealment [1]. It is an accidental retention of a textile in the operated area of the body, also called textiloma. The abdominal surgery is the most responsible for these complications [2]. The gossypiboma is a source of forensic medical problems due to the morbidity and the mortality that can easily be linked to carelessness. The morbidity can be compounded by the difficulty of the diagnosis, in relation with the latency and the clinical polymorphism. This justifies the use of imaging, which is often based on simple radiographs, but these are often insufficient [3]. In other cases computed tomography-scanner (CT-scan) is a useful means to refine the diagnosis. This study aims to study the place and the aspects of the abdominal gossypiboma in the CT-scan.

Methods

A retrospective study was conducted over 10 years, from January 2009 to December 2018) at Sylvanus Olympio teaching Hospital of Lomé (Togo). It has included all the surgically confirmed cases of the abdominal gossypiboma who had abdominal CT-scan prior to the gossypiboma ablation.

This study was approved by the head of the radiology department of Sylvanus Olympio teaching Hospital (*Ref N° 01/2018/RAD/CHUSO*). During the data collection patient names were not collected in order to preserve confidentiality.

Results

A total of 15 gossypiboma cases have been compiled. They were noticed in 11 women and 4 men, accounting for a sex-ratio of 0.36. The overall incidence was 1/3550 surgical procedures. The average

age of the patients was 34 years old (extremes of 16 and 78 years old). The initial surgery was an emergency intervention in 9/15 cases. It was a gynecological intervention in 11/15 cases. The surgical approach was at first a transverse suprapubic laparotomy in 10/15 cases; a median laparotomy in 3/15 cases and an inguinal incision in 1/15 cases. The incubation period of the symptoms related to textiloma was between 3 days and 3 years. Before the abdominopelvic CT-scan, an unprepared abdominal x-ray was performed in 6 patients and an abdominal ultrasound was performed in 4 patients, all of whom were considered non-contributory. The abdominopelvic CT-scan was performed without any further imaging investigation in 5 patients.

Various aspects were found on the CT-scan. In the case the radiopaque marker is present in the compress; the diagnosis is made easier in scanner by the presence of a linear foreign body, usually round or spiraled of very high density, sometimes with a hardening artefact in the form of a flash around the material (**Figure 1**). This aspect was observed in 3/15 cases. None of these 3 patients underwent further imaging than the CT scan.

Other aspects not related to the presence or absence of the marking compress was observed and can be grouped into three forms. The first aspect was made on the CT-scan of a mass with a peripheral shell, regular external limits and without densification of the surrounding fat. Its interior is made of dense meshes, with air and calcifications giving the image of an encapsulated sponge described as spongiform aspect. This form corresponds to a true granuloma more or less old on a gossypiboma, observed in 6/15 cases. It was observed in all cases in patients whose initial surgery took place more than 3 months ago (**Figure 2**).

The second aspect was observed in two other patients, whose surgery took place more than 3 months ago, a second aspect was observed. This aspect is the cystic form, seen on the scanner as a mass whose content is hypodense (fluid density) with a thick wall and net external limits, forming a real pseudo cyst around the textiloma (**figure 3**). The third aspect observed in the scanner was mixed lesions all observed within a short period of 3 days to 3 months. There was a variable association of a spongy formation with poorly limited contours, of a fluid collection organized in the contact with the textile forming a real abscess, an increase in the density of the peritoneal fat nearby implying infiltration and sometimes free peritoneal effusion (forming a peritonitis). These aspects were observed in 7/15 cases.

Apart from these classifiable forms, we have noticed two cases of migration of the textiloma into a hollow organ. The first one was a case of migration of a compress into the transverse colon, simulating a tumor in scanner. The second case was a pelvic abscess with fistula and the migration of the compress into the bladder. (**Figure 4**).

Discussion

The gossypibomas are the most frequently forgotten foreign bodies after surgery [4-8]. Their frequency is estimated to be between 1/1000 and 1/5000 on the abdominal surgeries [8]. This incidence was one case on 3550 abdomino-pelvic surgeries at the Teaching University Hospital of Lomé.

Women were the most represented (11/15 cases). This is what is commonly reported [10, 11]. This female predominance could be explained by the type of incision performed during gynecological intervention that constituted the main initial surgeries. Actually, the suprapubic way, firstly transversal, frequently used during these procedures does not expose the entire abdominal cavity to be visible, thereby increasing the risk of textiloma. The emergency surgeries appear to be the most common cause of this type of post-operative incident [7, 8], the emergencies have accounted for 6/15 cases in this study.

The choice of imaging technique is based on the clinical signs. Immediately after the surgery, a simple unprepared X-ray of the abdomen is enough when the compresses used are marked; this is the most commonly used means of detecting gossypibomas [13]. In our studies, 12/15 compresses did not have radiopaque markings, which is a major flaw in the safety of the surgical procedures. The use of labelled compresses, like the textile count, is part of measures to limit gossypibomas and their consequences [14, 15]. The clinical expression is sometimes late and frustrating. As a result, the hypothesis of gossypiboma is not always raised by the clinician, who may request at first, examinations different from radiography. The Ultrasound, which is easy to access, can be performed, but this technique may fail with the presence of abdominal gases [16].

The computed tomography is the most effective test to diagnose the gossypiboma and its complications [10, 17]. In practice, it is firstly carried out for a clinical suspicion other than a gossypiboma, or in the second position after other techniques has failed. In fact, the computed tomography scan enables to raise the diagnosis when there is no radiopaque marking and the ultrasound has failed.

Different aspects can be noticed. The main aspect is related to the marking of the textile. This is typically a high density linear image with no differential diagnosis problems which could have been found on the abdomen X-ray performed without preparation or even the scout-view.

The other aspects can be individualized into 3 types which we have correlated with the type of foreign body reaction.

On the anatomopathological level, two forms of textilomas have been described corresponding to two types of reactions resulting from the presence of textiloma in an individual's body. This will be either an exudative inflammatory reaction with an abscess or an aseptic reaction with fibrotic cotton reaction with mass development [18].

These anatomopathological aspects can be assimilated to the aspects on the scanner. The granomas correspond to spongy and pseudo cystic forms, late revelation which can even simulate an abdominal tumor [10, 16, 17]. The forms with exudative inflammatory reactions correspond to the mixed forms in the scanner expressing abscesses and peritonitis, usually appearing within a short time after the first surgery.

The computed tomography can also be used to diagnose the complications of textiloma. The most common is the migration into a hollow organ. It occurs most often in the digestive tract, but also in the bladder, as we noticed in one of our patients, or in the genital tract [1, 19-23]. In the majority of cases it is

a surgical surprise, the pre-operative diagnosis is for a fecaloma or tumor [16, 22, 24]. The diagnosis can be rectified if the history of surgery is specified to the radiologist.

Conclusion

The aspect of abdominal gossypibomas is polymorphic in the computed tomography. The diagnosis should be raised in front of any abdominal mass in a patient with history of abdominal surgery, even in the absence of a radiopaque marker. Prevention remains the best way to avoid the morbidity of these malpractices.

List Of Abbreviations

CT-scan: Computed tomography Scanner

Declarations

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Authors' contributions

MT and BT designed the study and wrote the initial draft of the manuscript. DFD, GP, BK, LS contributed to the design of the study, data collection and assisted in the preparation of the manuscript. LA and VA contributed to the interpretation and critically reviewed the manuscript. All authors approved the final version of the manuscript and have agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Availability of data and materials

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

This study was approved by the head of the radiology department of Sylvanus Olympio teaching Hospital (*Ref N° 01/2018/RAD/CHUSO*). During the data collection patient names were not collected in order to preserve confidentiality.

Consent for publication

Not applicable

Competing interests

The authors declare that they have no competing interests

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Figures



Figure 1

Abdominal transversal CT-scan image shows a spiral linear foreign body (arrow) of very high density, with a hardening artefact generating a flash around the material in a mass

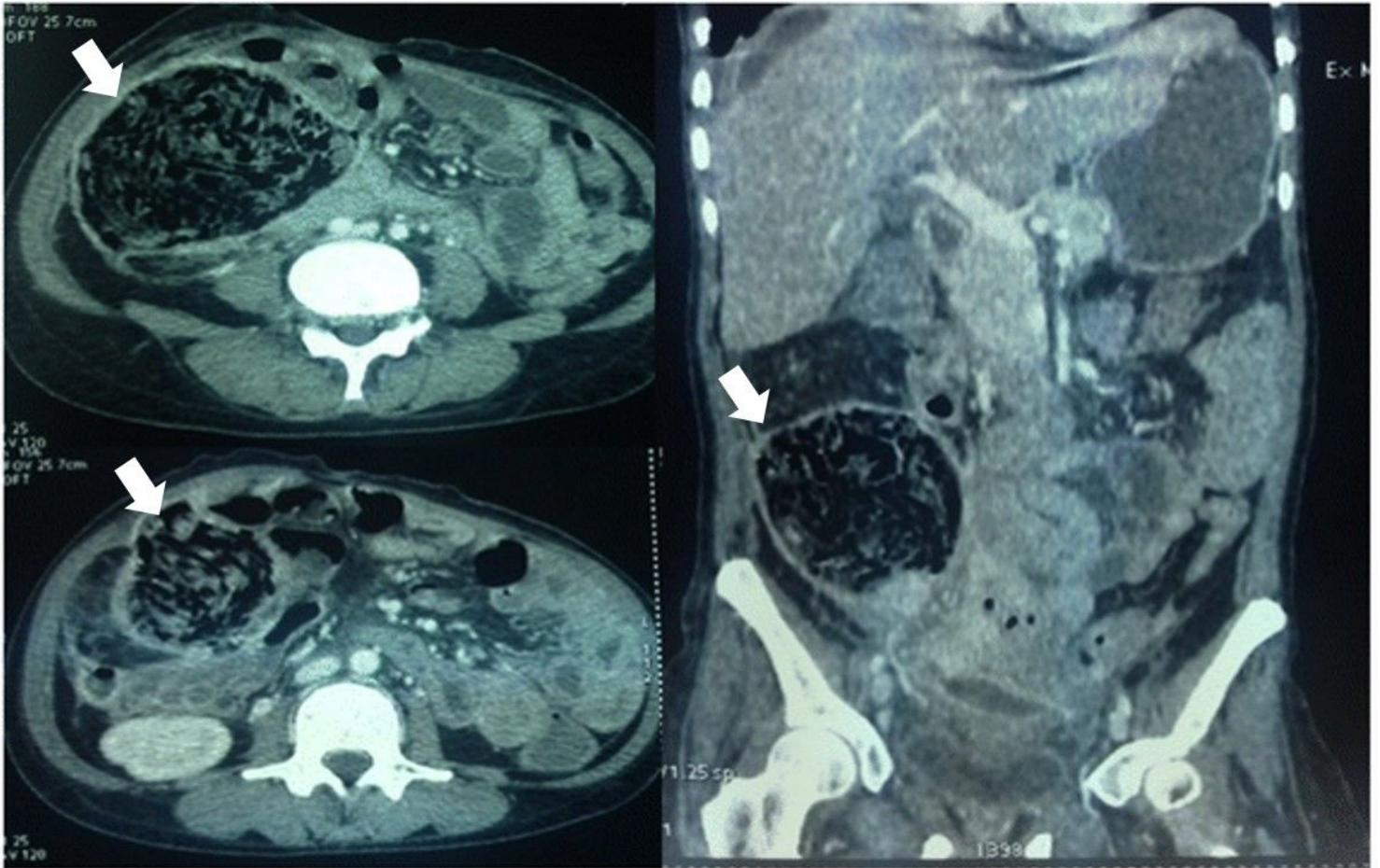


Figure 2

CT-scan images without (A) and with contrast injection (A) showing gossypiboma in the bladder (arrows)



Figure 3

CT-scan transversal image of the pelvis shows a hypodense mass with a thick wall and net external limits, forming a real pseudo cyst around the gossypiboma (arrow)



Figure 4

Abdominal CT-scan axial (A and B) and frontal (B) images showing a mass with a peripheral shell, regular external limits and without densification of the surrounding fat. Its interior is made of dense meshes, with air and calcifications giving the image of an encapsulated sponge described as spongiform aspect (arrows).