CASE REPORT

Textiloma: An uncommon complication of posterior lumbar surgery

Textilome : une complication rare de la chirurgie postérieure du rachis lombaire

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Summary  A surgical sponge or cotton swab that is inadvertently left behind in a surgical wound eventually becomes a "textiloma". Such foreign material (also called "gossypiboma") can cause a foreign-body reaction in the surrounding tissue. Textiloma is mostly asymptomatic in chronic cases, but can be confused with other soft-tissue masses. Therefore, it is important to be aware of patients who present with a paraspinal soft-tissue mass and unusual or atypical symptoms. Imaging is helpful for arriving at the correct diagnosis. Here, we describe a case of textiloma in which the patient presented with low-back pain 6 years after laminectomy and lumbar discectomy. Spinal computed tomography (CT) and magnetic resonance imaging (MRI) revealed a mass lesion in the posterior paravertebral region.

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Introduction

A retained surgical sponge is an infrequently reported condition that may be recognized incidentally during the early postoperative period, but may also lead to serious complications or remain asymptomatic for years [1]. Clinical manifestations of a retained surgical sponge are related to bacterial contamination and location of the sponge within the body cavity. Such foreign bodies often mimic tumors or abscesses both clinically and radiologically. They frequently occur after abdominal and thoracic surgery, but few have been linked to spinal surgery [2,3]. The incidence has been reported to be 0.7/10,000 patients, but this is probably an underestimation of the true numbers [3,4]. Many reasons
Computed tomography (CT) shows a soft-tissue mass of 2–4 cm lying within the posterior paraspinal muscles at the L4–L5 level (arrow). Cases are cited as possible causes for retained foreign bodies, including surgical, patient and human factors [5]. Here, we describe a case of a retained surgical sponge that manifested 6 years after laminectomy surgery, with emphasis on the computed tomography (CT) and magnetic resonance imaging (MRI) findings.

Case report

A 42-year-old woman presented with low-back pain radiating down into the right leg that had persisted for 3 years. Six years previously, she had undergone laminectomy and discectomy because of L5–S1 intervertebral disc herniation. Physical examination indicated good health status. There was no focal swelling or erythema over the incision scar area. The straight-leg-raising sign was positive at 45° on the right. There was no weakness or sensory loss, although the right ankle reflex was absent. Routine blood chemistry disclosed a white blood cell count of 12,000 per cubic millimetre, and an erythrocyte sedimentation rate of 10 mm/h and C-reactive protein level of 0.9. Conventional radiography showed an L5 laminectomy defect.

CT demonstrated a ring-shaped hyperdense lesion, with a hypodense center, that was 4 cm × 2 cm in size and lying on the right side within the posterior paraspinal muscles, with no bone reaction (Fig. 1). MRI of the lumbar spine showed a mass lesion in the posterior paravertebral region that appeared to be hypointense compared with spinal cord tissue on T1- and T2-weighted images. T1-weighted MRI with intravenous infusion of contrast showed an enhanced hyperintense rim around the hypointense center, suggesting an abscess (Fig. 2, a–c).

The patient underwent surgery, which revealed that the encapsulated mass was, in fact, a gauze sponge, folded on itself, covered with granulation tissue. The gauze sponge was completely excised along with the fibrous capsule surrounding it (Fig. 3). Histological examination showed that the fibrous capsule contained epithelioid histiocytes and giant cells surrounding the foreign-body material. The diagnosis was foreign material granulation tissue (Fig. 4). The sponge was cultured for aerobic and anaerobic bacteria, but no bacterial growth was seen. The patient made a good recovery and was able to resume her normal activities.

Axial T1-weighted magnetic resonance imaging (MRI) without (A) and with (B) contrast enhancement showing a ring-shaped, hypointense ellipsoidal lesion with a hypointense center in the right paravertebral soft tissue (arrow). A sagittal T2-weighted MRI (C) shows a posterior paravertebral mass with low signal intensity at the level of L4–L5 (arrow).
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Cal sponges without radiopaque markers are still used in many institutions, and such sponges are difficult to identify by standard radiographic and CT imaging. In our case, the examination of plain films revealed no such markers [2,6]. Radiologically, a whirl-like pattern, with or without radiopaque markers, is a characteristic feature of retained sponges [2].

Only a few reports in the literature have discussed the appearance of textilomas on CT, where signs vary according to the reaction formed. The most characteristic sign is a spongiform pattern formed by gas bubbles [2]. However, this characteristic sign may not be observed over time because of the absorption of gas bubbles [2]. The other sign typically seen on CT investigations is a low-density mass with a fine, high-density capsule containing the contrast agent [2,7,9]. In our case, we observed only a low-density mass and a high-density capsule, but no gas bubbles. On MRI, these lesions appear to have a variable MR signal intensity that depends on the amount of fluid and protein found in the lesion [6]. MRI showed a granuloma that was hypointense on T1-weighted images, but hyperintense on T2-weighted images. Also, the capsule is typically dark on both T1- and T2-weighted images [6,10], with enhancement following intravenous injection of contrast. However, this imaging finding was not observed in our patient, and this was attributed to the nature of the surgical gauze, the different foreign-body reaction, and the quantity of fluid and protein associated with the lesion. Kuwashima et al. [4] has reported that the signal intensity from the center of a gossypiboma varies on T1- and T2-weighted images. In their report, the mass with high signal intensity at its center on T1- and T2-weighted images was a surgical sponge rich in serosanguineous fluid and a high protein concentration, whereas the mass with a center of low signal intensity on T1- and T2-weighted images was mainly composed of organized cotton matrix with little fluid.

Foreign bodies that are left behind during operations can become organized and increased in size, but such changes do not correlate with time [10]. To date, the longest reported interval in the neurosurgical literature is 40 years. In that case, a cotton pad was left posterior to the lumbosacral vertebrae during a laminectomy operation and the material eventually caused a cavitary lesion [3]. In contrast, our patient developed a textiloma 6 years after laminectomy.

Many reasons are cited as possible causes for retained foreign bodies. The risk of such retention is significantly increased in emergencies, with unplanned changes in procedure (surgical factors), higher body mass index (patient factors), distractions during surgery and with failure to conform to established counting procedures (human factors) [5]. The best approach to textilomas is prevention, which avoids repeat surgery. The principal preventative measure is to keep a careful count of the pieces of cotton and gauze pads that are temporarily placed in the wound. Also, such materials should always have a tag that allows them to be easily located and removed [10].

Conclusion

Retained surgical sponges generally do not have any specific clinical and radiological signs. They should be included in the differential diagnosis of a postoperative collection and the lesion may present as a mass. In such cases, the differential diagnosis typically includes tumors [6]. The exudative type of gossypiboma causes symptoms earlier than does the fibrous type [6].

Nowadays, surgical sponges contain radiopaque barium sulphate markers and inert plastic materials to facilitate their detection by standard radiography. Such sponges can also be readily identified on CT scans. However, surgical sponges without radiopaque markers are still used in surgical procedures.

Discussion

A surgical sponge that is inadvertently left in a surgical wound eventually develops into a textiloma [6]. Strictly speaking, the term "textiloma" should be reserved only for a surgical sponge consisting of organic material. Indeed, "gossypiboma" is the term used to describe a mass within the body that comprises a cotton matrix surrounded by a foreign-body reaction [6]. However, these days, synthetic material has replaced cotton, so the definition of a textiloma and gossypiboma need to be adapted.

The incidence of retained foreign bodies following surgery varies from 0.01% to 0.001% [1,6,7]. Of these cases, 80% are gossypibomas [6]. Textiloma represents a complication of all forms of surgery: abdominal (52%); gynecological (22%); urological and vascular (10%); orthopedic and spinal (6%) [6].

Olnick et al. [8] has further classified textilomas into acute necrotic forms and chronic forms. The acute form, in which an exudative reaction dominates the clinical picture, along with abscess formation and skin fistulas, is symptomatic in the early postoperative period. The differential diagnosis in such cases includes postoperative collection, hematoma and non foreign-body abscess. In the chronic form—as seen in our patient—adhesions and encapsulation eventually lead to the development of a foreign-body granuloma. Asymptomatic forms are sometimes discovered fortuitously. A delayed presentation may be seen months or even years after the initial surgery. Our patient was referred to us with symptoms of low-back pain 6 years after the primary operation. Adhesions and encapsulation are common features of gossypiboma, and the lesion may present as a mass. In such cases, the differential diagnosis typically includes tumors [6]. The exudative type of gossypiboma causes symptoms earlier than does the fibrous type [6].

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the differential diagnosis of soft-tissue masses seen along the paraspinal region in those with a history of a previous spinal operation. The key to preventing retained surgical sponges is to routinely inspect the operative field and body cavity, and to meticulously and frequently keep a count of all materials that are placed in the wound.

References