Intraspinal Retained Cotton Patty: Report of an Extremely Rare Case and Review of the Literature

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INTRODUCTION

Cotton material that is inadvertently left in the surgical site is called a gossypiboma. Paraspinal gossypibomas are not infrequent and have been reported in several occasions (1,4-9,11). However intraspinal gossypibomas as retained cotton patty are very rare and only 4 cases could be encountered in careful review of the literature (2,3,10). Most of the patients who have surgical decompression for lumbar disc herniation or canal stenosis obtain good and long-term relief of pain, but in a minority the pain might persist mostly because of ignoring a free fragment or a missed level or may reappear as a result of scar formation as well as recurrent disc herniation. However, retained cotton patty should be considered as a rather rare cause of exacerbation of the radicular symptoms after initial relief of pain.

An inadvertently left cottonoid in the spinal canal is considered a very rare event. However, the exact incidence of this complication should be more common than anticipated. Obviously many retained cottonoids have been never reported by the surgeons in redo surgeries because of the medicolegal implications. On the other hand, an unknown number of neglected cottonoids might remain undetected for many years, considering the fact that this organic material is better tolerated than other material left in body.

CASE REPORT

This 36-year-old male was referred because of intractable bilateral radiculopathy at the region of the knee and anterior aspect of the legs. His past history disclosed surgery of herniated lumbar disc for similar pain six months prior to admission.

The patient had initial relief of pain only for two months before experiencing recurrence of bilateral radicular pain. However, the pain had reached an intractable level in the last 20 days before admission. His neurological exam was compatible with bilateral root pain, starting at the buttocks and radiating anteriorly on the knees and extending down on the anterior aspect of the legs, compatible with L4 radiculopathy. Radicular pain was aggravated by coughing and the Valsalva maneuver. Strength was normal but knee jerks were diminished on both sides. Sensation was

ABSTRACT

Post-discectomy intraspinal retained cotton patty is very rare issue that can present with a rather early course within weeks to months as an infected mass or very late with a granulomatous reaction. In both instances, it clinically mimics recurrent disc herniation. Herein, we will present a 36-year-old male with bilateral radiculopathy reappearing six months after discectomy as the result of two infected cotton patties that were simultaneously neglected and remained at the surgical site. The current case is apparently the first example of two retained gossypibomas in the spinal canal. The unique GD-enhanced MRI features of the condition will be described for the first time in the literature. Moreover, sufficient attention will be paid to the optimal management of this rare post-discectomy complication.

KEY WORDS: Complication, Cotton Patty, Gossypiboma, Lumbar disc herniation, MRI
decreased on the corresponding areas of the knees and legs. Plain radiographs showed partial laminectomy at the level of L3-L4 (Figure 1). On T1-weighted MR images, an oval isointense mass was seen at each side at the L3-L4 level (Figure 2). GD-enhanced MRI showed strong rim enhancement around these masses, mostly compatible with abscess formation (Figure 3). ESR was 68 and CRP was positive for infection.

The patient underwent exploration. At surgery a tailed cotton patty embedded in a thin capsule and compacted under the lamina of L3 was found with considerable compression of the corresponding nerve root on each side. After rupture of the thin capsule on each side, purulent material and the cotton patties were removed (Figure 4). The cotton patties and the infectious material were sent for culture separately. Subsequently the surgical site was irrigated several times with normal saline mixed with gentamycin and the wound was closed. The surgery was uneventful and the patient was ambulated on the third post-operative day showing dramatic improvement of root pain. Gram-positive Staph. aureus was identified from the cultures obtained from the infected tailed cottons. The organism was sensitive to Vancomycin. Therefore, the patient remained hospitalized and received parenteral Vancomycin 500 mg. three times daily for three weeks. He was subsequently discharged and Rifampin 600 mg daily in a single dose was prescribed for an additional three weeks at home. Two months after surgery and on the follow-up, the patient was symptom free. ESR and CRP were both within normal limits Six months after surgery, he called up us and noted that he has returned to his previous activities.

**DISCUSSION**

Cotton patties are used frequently on or around the lumbar dural sac and spinal nerve roots mostly for control of bleeding. Marking the cotton patties and their tail is usually effective for remembering not to leave them (3). However, an uncountable number of cotton patties might be used and packed in the surgical site when profuse bleeding as a result of bad positioning, obesity or CSF leak secondary to dural tear occurs. Therefore, one or two patties might be missed in such occasions especially if they are not considered by the surgeon or not counted by the nurse in such exhausting stressful situations.

Cotton patties retained in the spinal canal are so-called gossypibomas, Their remaining in the spinal canal...
induces two types of reactions. One reaction is exudative in nature and leads to formation of an abscess with or without secondary bacterial infection. In such instances, it ultimately drains itself through a cutaneous fistula. The clinical presentation of this type is usually within a few weeks to a few months after surgery (2,3,6).

In the second type, a missed cotton patty can lead to a rather slow granulomatous reaction and encapsulation compatible with foreign body granuloma. In this case a delayed clinical pictures might develop several months to years after surgery (6,10).

Besides the intractable radiculopathy that is the prominent cardinal feature in both groups, a fistula will appear sooner or later and point to the diagnosis in the exudative type (3,6).

A review of the literature revealed that only four cases of symptomatic post-discectomy retained cotton patties have been published previously (2,3,10). The survey did not disclose two cotton patties neglected after bilateral discectomy. This means that the current case is the first example of such complication.

Cotton patties are hard to see in plain radiographs even if they contain opaque markers. However new digital x-ray machines seem to be able to detect them.

It can be difficult to distinguish a recurrent disc and scar formation from granulomatous retained cotton patty.

Figure 3A: GD-enhanced MRI, sagittal view, showing an oval mass with rim enhancement above the level of L3-L4 disc space.

Figure 3B: GD-enhanced MRI, axial view showing two oval masses with sharp ring enhancement compatible with infected cottonoids.
in the operated area by a CT scan, as these pathologies have the same radiodensity (2,11). The injection of contrast medium enables the distinction to be made. While a fresh herniated disc does not enhance with contrast, it should be noted that a herniated disc undergoes connective tissue organization with time. Therefore, an old recurrent disc, hypertrophic scar and granulomatous retained cotton patty are not truly different on contrast CT scan as all show faint enhancement. The exception is an infected retained cotton patty that should show strong rim enhancement.

On non-enhanced MRI, a hypertrophic scar, granulomatous lesion and recurrent disc are depicted as an isointense mass and cannot be differentiated from each other. In Gadolinium-enhanced MRI, the capillaries that have developed both in the hypertrophic scar tissue and retained cotton of the granulomatous type take up more contrast medium than the non-perfused recurrent disc. The finding in the former two can be very confusing and non-specific because of their similarities. However, GD-enhanced MRI is highly specific for the infected type of neglected cotton patty because it exhibits itself as a low or isosignal well-circumscribed round or oval mass with a very high signal and sharp rim. This apparently differs from a postoperative hypertrophic scar demonstrating a mild to moderate rim enhancement.

Symptomatic retained cotton patties should be removed as soon as the diagnosis is made. In infected ones, appropriate antibiotic therapy for two to three weeks is recommended. Complete recovery is expected both in the exudative and granulomatous types, even in longstanding cases (2,3,10).

In conclusion, a neglected cotton patty used in lumbar disc surgery might ultimately result in reappearance of radiculopathy resembling the initial nerve root pain. The current case clearly depicts that even two retained cottonoids might be forgotten and remain in the surgical field as the result of profuse intraoperative bleeding. This complication despite its rarity should be included in the differential diagnosis of recurrent lumbar disc herniation even in a patient with bilateral radiculopathy. The present case shows the value of GD-enhanced MRI features of the pathology that has been not mentioned previously. With ignorance of these useful MRI features, one might inadvertently misdirect the treatment toward pain management strategies such as transforaminal and intrathecal steroids or blocks. Nonetheless, leaving cotton patties can be avoided by taking preventive measures during surgery including: 1) Careful inspection of the wound by the surgeon after obtaining adequate hemostasis, 2) Insisting upon their meticulous count, 3) Not allowing the nurse to split them, 4) Preferring cotton patties with opaque markers and long sutures to the handmade ones that are frequently used in developing countries. Exploration is advised once the diagnosis of a retained cotton patty is made or even if it is suspected.

REFERENCES


