

## Successful Laparoscopic Removal of a Self-Inflicted Thermometer that Spontaneously Migrated into the Peritoneal Cavity

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A sixty-three-year-old Caucasian male was referred to emergency service 10 hours after self-infliction of a mercury glass thermometer into the urethra. The patient presented without abdominal or voiding symptoms. Radiological imaging confirmed the presence of a thermometer in the peritoneal cavity, without signs of contrast leakage from the bladder. The patient underwent suture of the perforation site with a subsequent successful removal of the foreign body using laparoscopic approach. Recovery was uneventful.

To the best of our knowledge, we are not aware of any previous report of laparoscopic removal of a mercury glass thermometer from the peritoneal cavity. Laparoscopic removal of fragile items, such as a thermometer, is obviously feasible but associated with substantial risks.

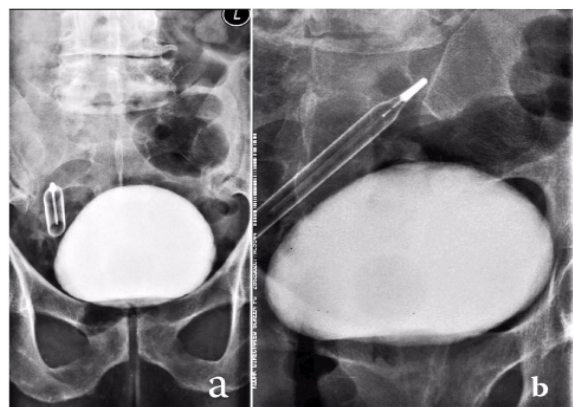
### INTRODUCTION

There is a myriad of reported foreign bodies in the bladder<sup>(1)</sup>. Sexual pleasure is the main reason for insertion, followed by inquisitiveness and mental or psychiatric disorders<sup>(2)</sup>. However, an occasional item, such as a thermometer, inadvertently slips into the bladder.

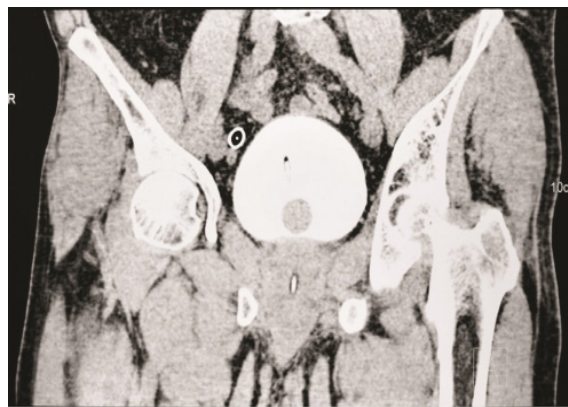
Intraperitoneal migration of this foreign body is a rare event, and there are only a few reports in the literature<sup>(3,4)</sup>.

### CASE REPORT

A sixty-three-year-old Caucasian male was referred to emergency service 10 hours following inadvertent self-infliction of a mercury glass thermometer through the urethra. The patient denied abdominal or voiding symptoms. His past history did not reveal the treatment of serious health conditions including psychiatric diseases. Physical examination was unremarkable. There were no signs of urethrorrhagia or macroscopic hematuria. Urinalysis revealed 10 to 15 red blood cells in the high power field. Although the thermometer was shown frankly on plain X-ray of



**Figure 1.** Cystogram confirming an absence of extravasation of contrast from the bladder and the thermometer in the peritoneal cavity in the coronal (**Figure 1a**) and oblique plane (**Figure 1b**).



**Figure 2.** CT scan showing intraperitoneal localization of the thermometer and an absence of contrast extravasation from the bladder.

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the pelvis, an ultrasound surprisingly failed to show it in the bladder. Thereafter, a cystogram with 300 ml saline and 30 ml of iodine contrast showed no signs of contrast extravasation from the bladder (**Figures 1a&b**). A CT scan confirmed this finding (**Figure 2**). The patient requested a laparoscopic removal of the foreign body despite possible risk of potential intraperitoneal spillage of mercury. The decision to attempt laparoscopic removal was made following several successful removals of similar items from the laparoscopic training box. The procedure was performed under general anesthesia using three trocars: a 10 mm camera port was placed beneath the umbilicus and additional two ports (5 and 12 mm) were placed bilaterally in the middle of the line between umbilicus and spina iliaca anterior superior, taking care to avoid injury to epigastric vessels. A small tear of parietal peritoneum near the median umbilical ligament was sutured. The thermometer was found in the peritoneal cavity. It was inserted into the 12 mm port and both items together were pulled out undamaged. After half-hour the procedure was completed leaving a peritoneal drain and three-way 18-Fr Foley catheter in the bladder. The drain and the catheter were removed on postoperative day 3 and 7, respectively. Recovery was uneventful.

## DISCUSSION

The medical thermometer has not been an unusual foreign body in the bladder<sup>(1)</sup>. Insertion of this device into the bladder was more frequent in females, due to the short urethra and common attempts to measure a basal core temperature in the vagina or urethra for reproductive reasons. Passage of a thermometer through the male bladder is more difficult due to the length and curvatures of the urethra<sup>(1,2)</sup>.

Diagnosis of the thermometer in the bladder or peritoneal cavity is not challenging because glass and mercury are clearly radiopaque on X-ray. However, sometimes it may be difficult to prove radiologically a route of passage of the foreign body, because of the lack of contrast extravasation.

All reported foreign bodies have been removed safely by the open surgical procedures<sup>(3,4)</sup>. To the best of our knowledge, laparoscopic removal of a mercury glass thermometer from the peritoneal cavity has not been reported previously. The technique of laparoscopic removal is quite easy. However, this procedure is associated with a risk of injury of surrounding organs with glass fragments as well as spillage of mercury into the peritoneum, and potential systemic toxic effects of mercury on the central nervous system and kidneys. Furthermore, enterocutaneous and rectal fistulas, granuloma formation and intestinal obstruction following intraperitoneal mercury exposure have been reported previously<sup>(5,6)</sup>. Some of these risks can be lowered by usage of a retrieval bag.

## CONFLICT OF INTEREST

The authors report no conflict on interest.

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## REFERENCES

1. van Ophoven A, de Kernion JB. Clinical management of foreign bodies of the genitourinary tract. *J Urol* 2000; 164: 274-87.
2. Bogdanović J, Sekulić V, Trivunić-Dajko S, Herin R. Re: Palmer et al.: Urethral Foreign Bodies: Clinical Presentation and Management *Urology*. 2017; 100: 256-8
3. Kiriyama T, Motonaga I, Ichikawa T: Foreign body migration from the bladder. *J Urol* 1976;115: 530-1.
4. Nie J, Zhang B, Duan YC et al.. Intestinal obstruction due to migration of a thermometer from bladder to abdominal cavity: a case report. *World J Gastroenterol*. 2014;20:2426-8.
5. Mazer-Amirshahi M, Bleecker ML, Barrueto, FJr. Intraperitoneal Elemental Mercury Exposure from a Mercury-Weighted Bougie. *J Med Toxicol*. 2013; 9: 270-3.
6. Haas NS, Shih R, Gochfeld M. A patient with postoperative mercury contamination of the peritoneum. *J Toxicol Clin Toxicol*. 2003;41:175-80