Endourology

Transurethral cystoscopic removal foreign body (thermometer) with a stone extractor: A case

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\section*{ABSTRACT}
Bladder foreign bodies have been reported with a great variety, including daily objects and even living things. Except for these, thermometer in bladder were reported with several cases. Due to the limitations of surgical equipment, the removal of bladder thermometer was initially performed with manipulation combined with forceps for female patients, and now it has been taken out with the assistance of various endoscopes. In this report, a 25 years old male inserted a thermometer in his bladder, and a transurethral cystoscopic removal procedure was conducted with a stone extractor.

\section*{Introduction}
Bladder foreign bodies have been reported with a great variety, including Foley catheter, electric wire, ureteric stent, plastic material, double-J stent pusher, sticks of broom, bomb shrapnel, screws, fish, thermometers, even snakes. These items have characteristic each own, which make their remove unique, respectively. Among them, the bladder foreign thermometers were dealt by open surgical procedure. In this case, transurethral cystoscopic removal with a stone extractor was conducted to remove a mercury thermometer in an intact bladder.

\section*{Case presentation}
A 25 years old male patient, admitted outpatient room due to "self-insertion of a thermometer into urethra for 11 days". After the insertion, he didn't feel any uncomfortable symptom, and his tried to dislodge the thermometer himself. He didn't seek medical aid for expecting extrac-

\section*{Discussion}
First bladder foreign bodies have been reported tracing back to 17th century,\textsuperscript{1} Watson PH. reported 3 case of bladder foreign body. First two were 2 female patients had rubber catheters and ivory tubes detached into their bladders when catheterization was conducted, which were removed by pressing hypogastrum surface projection of the bladder, and the third case, a 5-year-old girl, had a rubber band inserted into her bladder, the author removed the band successfully by combining pressing the hypogastrum and forceps. In the 1950s, mercury thermometers were used to monitor a woman's body temperature during ovulation to learn when she was ovulating.\textsuperscript{2} Therefore, more bladder thermometers were reported then.

For its brittle texture, smooth surface, the long shape and hard character, the mercury thermometer is more difficult to grapple with foreign body forceps. Schloss WA and his colleagues\textsuperscript{3} reported a case of a woman who accidentally dropped a mercury thermometer into her bladder to monitor the ovulation temperature, and removed the thermometer with an electrosurgical resection loop of the prostate under the transurethral cystoscope. Some others also reported that mercury

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thermometers were removed successfully by inserting fingers into the urethra and assisted by colonoscopy in children.\(^2\)

Then, more reasons for that are sexual curiosity and mental illness, bladder foreign body, Foley catheter, electric wire, ureteric stent, plastic material, double-J stent pusher, sticks of broom, bomb shrapnel, screws, fish, thermometers, even snakes were reported. For male patients, due to the relatively long urethra and 2 physiological curves, it was necessary to cut open the bladder and remove the foreign body thermometer under the limited mechanical conditions.

For the mercury thermometer in bladders, the diagnosis depends on the history of the foreign body inserted into the urethra, and the diagnosis is relatively clear. After hospitalizing, the position of the thermometer in the bladder and the integrity of the bladder were evaluated. In cases where the bladder is perforated, laparoscopic removal may be required.\(^3\) In addition to evaluating the integrity of the bladder, it is also crucial to know whether the thermometer is broken and whether the mercury is leaking when making treatment plans. If mercury leaks out, it would be harmful to kidney function and the central nervous system. It may also form sinus tract, granuloma and intestinal obstruction, which should be targeted for prevention.\(^3\) In this case, the thermometer was located in the bladder, whose wall was intact, and the thermometer was not damaged. Gentle action was taken out to prevent the thermometer from fracture and to prevent bladder wall layer injury.

During procedure, a foreign body forceps was used to gently stirred the glass end of the thermometer to adjust it pointing to the bladder outlet. Under the direct vision, the glass end of the thermometer should be grappled with a stone basket, and the grappled point should not be too far away from the glass end, otherwise when the thermometer is dragged into the cystoscope sheath, it may fail due to too large an angle.

There are various types of foreign bodies in the bladder. With the upgrade of urinary surgical equipment, the removal of foreign bodies of the bladder has been experienced from the original female manipulation to current removed by the electron endoscopy. In this paper, cystoscopy combining stone extractor was used to remove the foreign body of male bladder thermometer, and the method is simple and effective.

Conclusion

The most suitable method for removal of bladder foreign body mainly depends on the nature and orientation of the foreign body, integrity of the bladder, adequate expertise, and equipment. A mercury thermometer as a bladder foreign body might be removed by the method of transurethral cystoscopic with a stone extractor.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.eucr.2019.100959.

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