

· Case Report ·

Laparoscopic treatment of a calcium fluorophosphate stone within a seminal vesicle cyst

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Abstract

Stones in the seminal vesicles are extremely rare. We present a 62-year-old patient with a stone within a seminal vesicle cyst, who was cured by laparoscopic treatment. The operative time was 80 min, and the estimated blood loss was 90 mL. Scanning electron microscope examination of the stone showed a compact crystal image externally and sparse spherical crystal structure in kernel. Composition of the stone was calcium fluorophosphate on X-ray diffractometer. The follow-up time was 15 months with no recurrence of cyst or stone. To our knowledge, this case is the first to describe laparoscopic removal of a stone within a seminal vesicle cyst, and the first to describe calcium fluorophosphate as the composition of seminal vesicle stones. (*Asian J Androl* 2008 Mar; 10: 337–340)

Keywords: calcium phosphates; calculi; fluoride; laparoscopy; seminal vesicles; sex organs, accessory, male; water pollutants, chemical

1 Introduction

Stones in the seminal vesicles are extremely rare, and only a few cases have been reported in the published literature [1–11]. Surgical removal is the treatment of choice when the patient is symptomatic, generally using open or endoscopic techniques [2–5]. Here we present a case of a stone within a seminal vesicle cyst cured by laparoscopic excision of the seminal vesicle cyst.

2 Case report

A 62-year-old Chinese man presented having experi-

enced 6 months of hemospermia, painful ejaculation, perineal pain and irritable voiding symptoms at our hospital in September 2005. Approximately 30 years previously, he had been diagnosed with left seminal vesiculitis and undergone conservative management in another hospital. Physical examination was unremarkable, but on digital rectal examination, a hard mass was felt within a cystic mass in the region of the left seminal vesicle. Routine examinations of blood, semen and urine were normal. Transrectal ultrasonography (TRUS) showed an echogenic focus approximately 1 cm in diameter within a well-defined sonolucent cyst in the left seminal vesicle. Computed tomography (CT) scan of the pelvis (Figure 1) revealed a 3.5 cm × 3.5 cm seminal vesicle cyst just above the left side of the prostate gland, with a 1.0 cm diameter coexisting stone. No congenital or other abnormalities were found in the urinary tract.

Transperitoneal laparoscopic removal of the left seminal vesicle cyst and stone was performed with the pa-

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tient under general anesthesia and in the Trendelenburg position. Three laparoscopic ports were used: a 10-mm port at the infra-umbilicus, a 5-mm midline port 5 cm above the symphysis pubis, and a 10-mm port that was two-thirds of the way along the line from the umbilicus to the left anterior iliac crest. After a transverse incision was made in the retrovesical peritoneum, the left vas deferens was easily identified and dissected, and was used as a guide to the seminal vesicle (Figure 2). The cyst was exposed by dissection close to the seminal vesicle to avoid an adjacent organ injury. After it was punctured and aspirated, the cyst was transected at the junction of the ipsilateral ejaculatory duct with the prostate. Then, the cyst with the stone was en bloc excised, packaged in a specimen bag and taken out through the 10-mm port.

Total operative time was 80 min, with an estimated blood loss of 90 mL. The patient was able to eat and walk within next 48 h of the operation. Histopathological analysis revealed a benign seminal vesicle cyst. The stone was round, smooth and yellowish-white measuring 12 mm × 10 mm. The patient's symptoms reduced considerably during the 15 months post-operation, without recurrence of cyst or stone on TRUS.

The stone was fragile and incised easily into two parts. Scanning electron microscope examination of one part showed a trim outer layer with granular sediment deposits, irregular cracks (Figure 3A) and sparse kernels made of 3–5 μm spherical crystals, which overlapped each other extremely irregularly and contained bores and crannies of different sizes and shapes (Figure 3B). The other part after grinding showed the

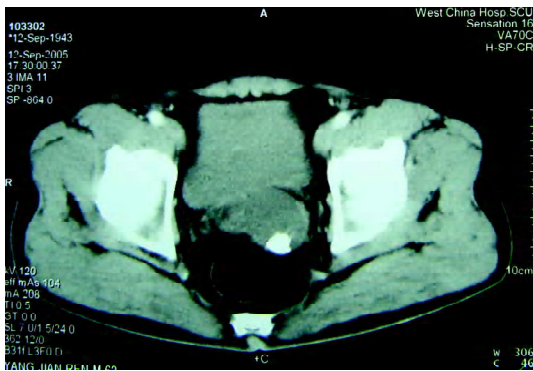


Figure 1. Pelvic computed tomography showing calculus within left seminal vesicle cyst.

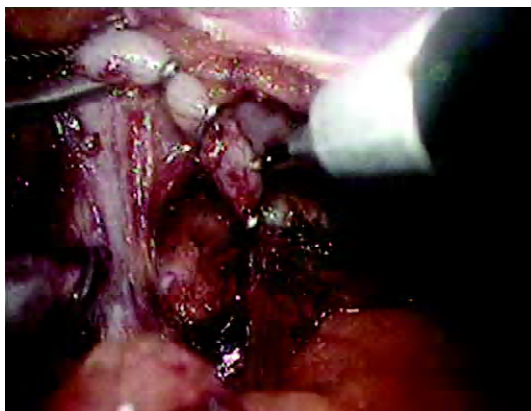


Figure 2. The vas deferens was used as a guide to find the seminal vesicle.

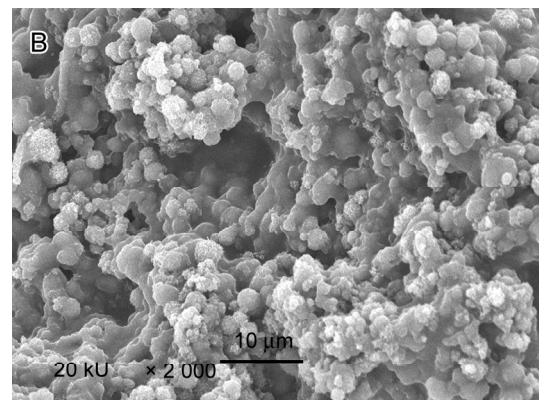
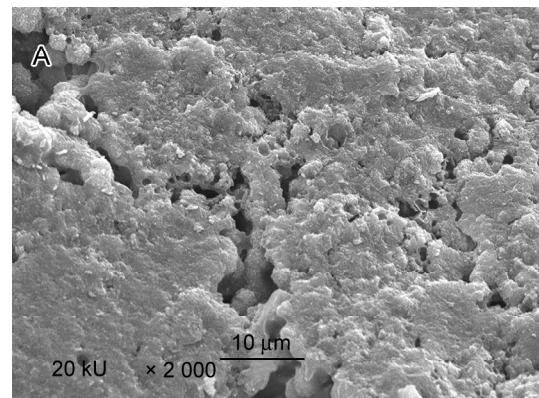


Figure 3. Image of seminal vesicle stone under scanning electron microscope. (A): Trim outer layer with granular sediment deposits and irregular cracks; (B): Sparse kernel made of 3–5 μm spherical crystals.

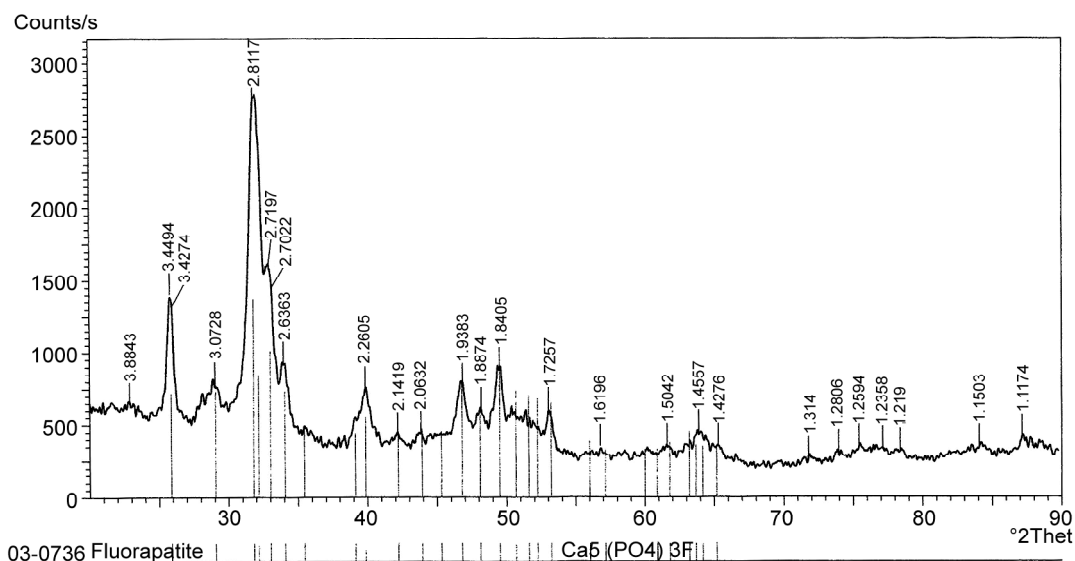


Figure 4. The composition of the seminal vesicle stone was calcium fluorophosphate, as shown using the X-ray diffraction method.

composition of $\text{Ca}_5(\text{PO}_4)_3\text{F}$ (calcium fluorophosphate) on an X-ray diffractometer (Figure 4). The serum fluorine level tested after the detection of fluorine ion in the stone was normal (0.11 $\mu\text{g}/\text{mL}$).

3 Discussion

Stones in seminal vesicles are extremely rare, and only a few cases have been reported in the published literature. Infertility, hemospermia, perineal/testicular pains and painful ejaculation are common primary symptoms [2, 3, 9]. TRUS is the most useful preliminary diagnostic method for patients with such symptoms [12]. CT or magnetic resonance imaging can be used to evaluate the pathology [13]. The possible cause of stone formation is believed to be urinary tract obstruction, infection, anomalies or urinary reflux into ejaculatory ducts [1, 2, 6–9]. In the present case, the patient had a history of vesiculitis, which might have lead to his ejaculatory duct obstruction, seminal vesicle fluid sediment and stone formation.

Compositions of seminal vesicle stones reported previously have included magnesium ammonium phosphate, whewellite and serum-like organic substances [1, 3, 7, 10]. However, the composition of our seminal vesicle stone was calcium fluorophosphate. This is the first case to describe calcium fluorophosphate as the composition of stone in the human body. According to Murray

and Jacobson [14], the causes of chronic fluoride intoxication are: ingesting drinking water with fluoride contamination, industrial sources (e.g. smelting of metals, production of brick, enamel and glass), agricultural uses (insecticide sprays for various vegetables and fruits) and mining of phosphate rock. Our patient once worked in a mountainous area for approximately 18 months. The patient had endemic fluorosis because of the high fluoride content in the drinking water in such areas. As the patient currently has normal serum fluorine levels, it is likely that the possible source of the fluorine ion in the stone was exposure to high levels of fluorine during his stay in the mountainous area.

Treatment requires removal of the stone. Several open surgical or endoscopic approaches have been described [2–5]. However, the seminal vesicle is located deep in the pelvis, and open operation requires extensive dissection and might cause morbidities associated with a poorly exposed operative field, long operative time, intraperitoneal rupture and heavy blood loss [1, 2]. A transurethral endoscopic approach might be an alternative to fragment the stone. However, it was difficult to remove our patient's stone because the stone was mobile within the cyst and not lodged at the orifice of the ejaculatory duct as in the case reported by Conn *et al.* [11]. Meanwhile, it was difficult to drain the hydatid fluid adequately as there was seminal vesicle cyst of 3.5 cm \times 3.5 cm size, and the cyst wall could not be removed by endoscopy.

The laparoscopic approach to seminal vesicles has been widely described recently. This technique might overcome the shortcomings of open or endoscopic approaches [15–18]. With excellent intraoperative access and visualization of the retrovesical space, we successfully removed the seminal vesicle cyst and stone through laparoscopy. The patient had minimal postoperative pain, rapid recovery and no complications requiring further treatment. As an alternate approach to endoscopic and open surgical techniques, the laparoscopic approach offers a minimally invasive technique appropriate for carefully selected patients with seminal vesicle stones.

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