

# An Interesting Non-Radiation Cause of Cystitis in a Patient Followed with a Pre-Diagnosis of Radiation Cystitis: Surgical Suture Material, Prolene

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**Abstract** Radiation cystitis is a condition caused by urinary bladder injury due to radiation, and is characterized by a need to urinate often and a burning sensation when urinating. A patient who was receiving radiotherapy after being operated on for cervical cancer developed intense cystitis symptoms during treatment that continued for a long time that indicated radiation association. A cystoscopy was decided upon due to the long-term symptoms, and after the removal of a suture detected in the bladder, all symptoms resolved. The tendency to associate problems with radiation in patients receiving radiotherapy may sometimes mask the actual cause. This report aims to draw attention to such situations, and to present an interesting case of cystitis that developed due to a non-radiation cause.

**Keywords:** radiation cystitis, cystoscopy, surgical suture material, prolene

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## 1. Introduction

Radiation cystitis is a radiation-induced urinary bladder injury that develops as a complication of radiotherapy to the pelvic area [1]. General symptoms include dysuria, frequency, urgency and hematuria. Its incidence varies between 23% and 80% [2]. The acute phase occurs in the first 3 months following radiotherapy, the subacute phase occurs at 3–6 months after radiotherapy, and the chronic phase radiation cystitis occurs after 6 months following radiotherapy. Acute phase cystitis is usually self-limiting through classic support treatments, while more advanced cystitis is likely to lead to a discontinuance of radiotherapy and the disruption of the main treatment. In the chronic phase, mild or severe hematuria may develop. Uncontrolled and life-threatening hematuria may require such serious surgical interventions as cystectomies [3,4,5].

A diagnosis of radiation cystitis is based on the exclusion of other non-radiation causes, for which cystoscopy is one of the primary evaluative examinations [6]. This report presents the case of a patient with non-radiation cystitis who was diagnosed with cervical cancer, who underwent pelvic radiotherapy and who was pre-diagnosed with acute radiation cystitis, however diagnosis was delayed due to neglect in the first evaluative examinations.

## 2. Case

A 55-year old female patient was operated on for cervical cancer. The patient was treated with adjuvant pelvic radiotherapy following the operation, and developed dysuria and frequency at week 2 of the treatment. A complete urinalysis revealed mild leukocytosis; no growth was detected in the urinary culture. An anticholinergic and a first-line analgesic were initiated. An abdominal ultrasound was performed, since her symptoms increased in the advancing days of radiotherapy, however the urinary bladder and other organs were reported as normal. A complete urinalysis and urinary culture were repeated and evaluated as normal. The patient saw no improvement, and so was referred to the Gynecological Oncology Outpatient Clinic where the operation had taken place, and also to the Urology Outpatient Clinic. The existing condition was evaluated as radiation cystitis by both clinics. At this point, the radiation doses to the urinary bladder were assessed from the radiotherapy planning system records, and checked for compliance with dose limits. The mobility and the lying position of the patient during treatment were examined retrospectively using offline review images. It was established that the dose limits had been followed, and there was no error in the lying positions. Insistent on a cystoscopy, the patient was re-referred to the Urologist, and the subsequent cystoscopy

revealed a surgical suture in the bladder (Figure 1). The patient was immediately taken into operation and the surgical suture was removed (Figure 2). After the operation, the patient reported a complete regression of complaints. The patient is in year 2 of treatment and under follow-up, and has had no recurrence or radiation-induced late-phase complications.

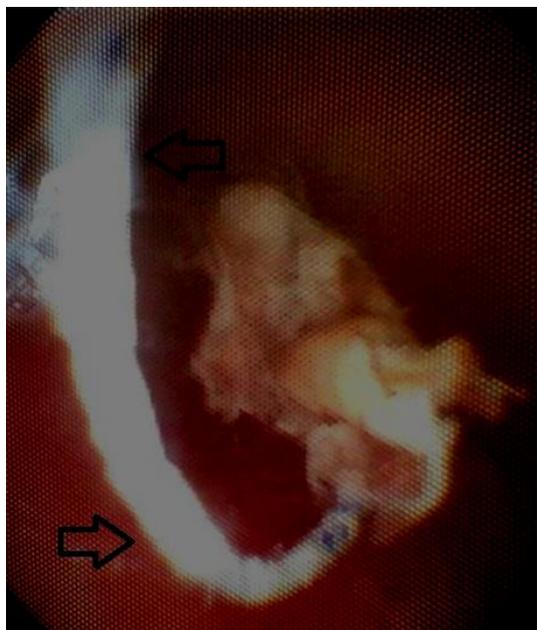


Figure 1. Surgical suture material in the bladder, cystoscopic image.

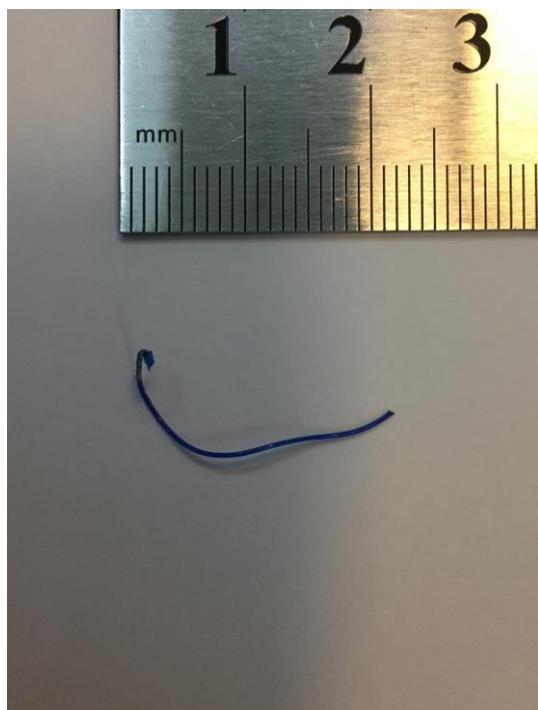


Figure 2. Surgical suture material, prolene, postoperative.

### 3. Discussion

Acute radiation cystitis may occur during treatment due to the rapidly dividing cells in the bladder mucosa or irritability of the detrusor muscle. In the acute phase, an inflammatory response and tissue edema may occur due to

the development of acute phase reactants in the bladder. In chronic radiation cystitis, the pathological process is different. Radiation injuries developing in the vascular and connective tissue cells are noticed only in the chronic phase due to the slow division of such cells. This time varies from a couple of months to couple of years, and is associated with total radiation dose [7]. Symptoms of acute radiation cystitis usually regress spontaneously within the first 3 months after radiotherapy. Anticholinergics like oxybutynin chloride, phenazopyridine hydrochloride or flavoxate hydrochloride are preferred [8]. Chronic radiation cystitis can occur at minimum month 6 and at maximum year 20 following radiotherapy, with the average latent period being around 35 months [9]. In chronic cystitis, hematuria is the most common symptom, and serious life-threatening hemorrhages may occur. Hematuria can be managed through oral or parenteral conjugated estrogens, pentosan polysulfate and WF10, intravesical alum, placental extract, prostaglandins and formalin. Minimally invasive surgical interventions, such as cystoscopic fulguration of bleeding points, urinary diversion by percutaneous nephrostomy and embolization of the internal iliac arteries; or radical surgical approaches, such as partial or total cystectomies, can be used. Alternative approaches include the administration of hyperbaric oxygen, among others [10].

Radiation-induced bladder toxicity is graded using the criteria of the Radiation Therapy Oncology Group (RTOG) and the European Organization for the Research and Treatment of Cancer (EORTC) [11]. The severity of such criteria as dysuria, nocturia and hematuria is clinically assessed to grade acute toxicity, while the cystoscopic findings measuring criteria such as telangiectasia, petechia and necrosis are used to measure chronic toxicity.

With the use of modern radiotherapy techniques, radiation cystitis is encountered less frequently nowadays [12,13].

### 4. Conclusion

Radiation cystitis is a significant complication of radiotherapy. The exclusion of non-radiation causes is of great importance for correct diagnosis and for a well-managed treatment process. Cystoscopy is among the first evaluative examinations, and is an important diagnostic tool that should not be overlooked. The tendency to associate all complaints with radiation in patients undergoing radiotherapy may result in missing out the diagnostic algorithm. This, which we encounter to a substantial degree in daily radiotherapy practice, can cause significant delays in arriving at the actual diagnosis, as can be seen in the presented case. It should be known that rash mindscape of daily practice may not always be true during the process leading a case to diagnosis from pre-diagnosis, and such a mindscape should be prevented from interfering with the implementation of standard approaches.

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