

## The Use of Multiple Foley Balloon Catheters for Treating Life-Threatening Radiation Induced Hemorrhagic Cystitis

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### Abstract

Life-threatening hematuria from radiation induced hemorrhagic cystitis remains a difficult clinical problem for the urologists. We report the use of multiple inflated Foley balloon catheters for compression on the bleeding bladder mucosa via the suprapubic and urethral routes in a patient with hemorrhagic shock due to intractable bleeding of radiation induced hemorrhagic cystitis. This method is simple and quick to stop bladder bleeding for life saving.

**Keywords:** Hemorrhagic cystitis; Radiation; Foley balloon catheter

### Introduction

Hemorrhagic cystitis is a known complication of pelvic irradiation that occurs in up to 6.5% of patients after treatment for cervical cancer [1]. Hemorrhage from radiation induced cystitis can range from mild hematuria that can be treated with bladder irrigation, cystoscopic fulguration or hyperbaric oxygen therapy to severe bladder hemorrhage that necessitates multiple blood transfusions and requires more invasive therapy such as formalin instillation, vascular embolization or cystectomy and/or urinary diversion.

Here we describe a novel technique using multiple Foley balloon catheters to control life-threatening hematuria in a case with radiation induced hemorrhagic cystitis.

### Case Report

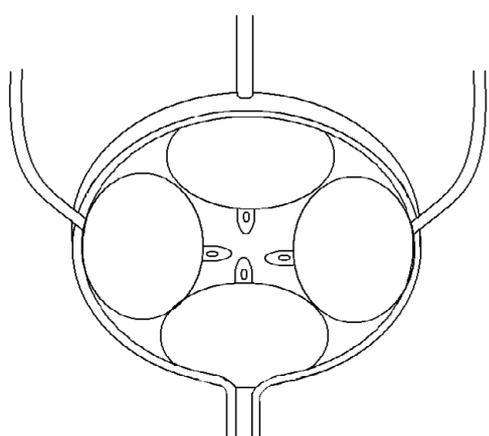
A seventy-six year-old woman was diagnosed with ovarian carcinoma 20 years ago and underwent a total abdominal hysterectomy and bilateral oophorectomy followed by external beam radiotherapy (1.5 Gy/fractions, 5 days/week for 4 weeks). The patient was brought to our emergency department because of life-threatening bleeding of hemorrhagic cystitis. On arrival, the blood pressure was 85/58 mm Hg, the pulse 125 beats per minute, the respiratory rate 24 breaths per minute, and the oxygen saturation was 90% while the patient was breathing ambient air. Hemoglobin level was 3.5 g/dl. Tracing her medical history, she had persistent symptomatic gross hematuria with clot retention several months in duration, requiring multiple hospitalizations for clot evacuation and blood transfusion. Various

interventions were subsequently required, including continuous bladder irrigation; cystoscopy with clot evacuation and bladder fulguration; instillation of formalin; and hyperbaric oxygen, all without improvement.

At this time of transurethral coagulation of bladder mucosa, bleeding from wide area of the bladder did not cease. Hemorrhagic shock developed during the surgery due to intractable bladder bleeding. For life-saving, three 20F Foley balloon catheters were inserted suprapubically into the bladder under cystoscopic guidance. Each of the catheter balloon was inflated with 50 mL of sterile water. The three Foley balloon catheters were pulled upward for the compression of the bladder mucosa on the anterior and lateral parts. A 20 F Foley balloon catheter was introduced via the urethra into the bladder and the balloon was inflated with 50 mL of sterile water. Traction on the urethral Foley balloon catheter was used for the compression of the mucosa on the posterior part of the bladder (Figure 1). After that, bladder bleeding was suddenly diminished, although very slight macrohematuria continued thereafter. The operative time was 45 minutes and the patient tolerated the procedure well. She was extubated without difficulty and brought to the intensive care unit for overnight observation and then transferred to the floor the following day in stable condition. After 2 days following the procedure, she was hemodynamically stable on examination; her haemoglobin was 11.2 g/dL without further blood transfusion. Because of the concern for recurrent bladder bleeding, cystectomy was mandatory. Open cystectomy with ileal conduit was performed on day 5 after admission. She recovered uneventfully and was discharged in stable condition 2 weeks later.

### Discussion

Severe hematuria from radiation induced hemorrhagic cystitis can be life-threatening and its management remains a difficult clinical problem. A life-threatening situation can develop when blood transfusion fails to keep pace with the rate of blood loss. Aggressive treatment options include Percutaneous embolization of both vesical



**Figure 1:** The use of multiple inflated Foley balloon catheters to control intractable bladder haemorrhage.

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arteries has been described [2]. Cystectomy remains the final treatment option for patients with severe radiation cystitis which is resistant to conservative treatments [3].

We report the use of multiple inflated Foley balloon catheters for compression on the bleeding mucosa of bladder via the suprapubic and urethral routes in a case with life-threatening radiation induced hemorrhagic cystitis. This method is simple and quick to stop bladder bleeding for life saving. It is easy to performed by all urologists without any special equipment in an emergent situation.

## Conclusion

The application of multiple inflated Foley balloon catheters for

life saving in the case with intractable hematuria is a simple and quick method to stop bleeding.

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