



## Case Report

# Rectovaginal fistula: An early complication of radiotherapy in a sexagenarian with cervical cancer

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## ABSTRACT

A 62-year-old Nigerian woman was admitted on account of cervical carcinoma Stage IV and was requested to undergo radiotherapy and chemotherapy. Six weeks after commencing this treatment she starting passing feces involuntarily through the vagina. Imaging studies revealed a high sited, medium sized, and rectovaginal fistula (RVF). RVFs have been documented as a late complication of radiotherapy for any gynecological malignancy but it occurred earlier in this patient. A preliminary surgical procedure, a sigmoid-ostomy, was performed successfully and a definitive surgery, a sigmoids-rectal anastomosis, was planned to be done in 18 months after the diagnosis of the RVF but the patient died shortly after the first procedure. The present case indicates that a RVF can occur as an early complication of radiotherapy even when it presents with mild symptoms.

**Keywords:** Cervical carcinoma, Radiation therapy, Rectovaginal fistula

## INTRODUCTION

Rectovaginal fistula (RVF) is one of the most complicated subjects in obstetrics and gynecology practice. It has a devastating effect on patients' quality of life and appropriate management of this condition has been challenging.<sup>[1]</sup> In advanced cervical carcinoma, the implementation of radiation therapy combined with chemotherapy sets in motion a sequence of events that might ultimately produce a RVF, within at least 5 months afterward.<sup>[2-4]</sup>

Radiation therapy and chemotherapy were requested for a patient treated with advanced stage cervical carcinoma. Six weeks post-therapy she developed a RVF with involuntary passage of a copious volume of fecal matter.

This case indicates that pelvic radiotherapy is capable of producing a potentially life-threatening complication like a RVF in <2 months.

## CASE REPORT

A 62-year-old Nigerian woman was referred from a secondary health facility to our hospital on account of cervical carcinoma Stage IV after a cervical biopsy had been done for histology which made a diagnosis of a large keratinizing squamous cell carcinoma and she had presented with irregular vaginal bleeding of a year duration and altered bowel habit. The patient was requested to undergo radiotherapy and chemotherapy in another tertiary health facility (university of Nigeria

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Teaching Hospital, Enugu). She immediately obliged and received 20 courses of radiation therapy and three courses of chemotherapy. However, 6 weeks after the commencement of the treatment she presented with the passage of stool per vaginam whenever she defecated. The volume emitted was low at the onset but it gradually increased in volume.

She had no history of a surgical operation that involved the vagina, perineum, rectum, and anus. There was no history of injuries during childbirth. She had hygiene issues because of the condition but it did not stop her from continuing her regular daily routine.

On examination she was mildly pale, afebrile and had no pedal edema. She is a known peptic ulcer disease patient. Laboratory examinations revealed anemia (red blood cell count,  $2.22 \times 10^6/\mu\text{l}$  and hemoglobin, 6.2 g/dl), reduced white blood cell count ( $1.6 \times 10^3/\mu\text{l}$ ; lymphocytes-17.8%, monocytes-15.6%), and reduced bicarbonate (19 mmol/l).

A barium enema was done [Figure 1] and it demonstrated a high fistula that has a caliber of 7.17 mm, which extended from the rectum to the vaginal fornix.

An abdominopelvic computerized tomography scan [Figure 2] delineated the diversion of rectal air through an anomalous tract into the vagina.

The results of these radiological examinations confirmed the provisional diagnosis of a RVF. The patient was subsequently prepared for a sigmoid colostomy in order to allow adequate time for aseptic healing of the fistula. The ostomy operation was successfully done 2 months later and the colostomy became functional on the 3<sup>rd</sup> day post-operative. There were no obvious shortcomings identified in the management of this patient.

The plan was to do an anastomosis of the sigmoid colon to the rectum 18 months following the appearance of the fistula symptoms but the patient died 2 weeks after the ostomy operation.

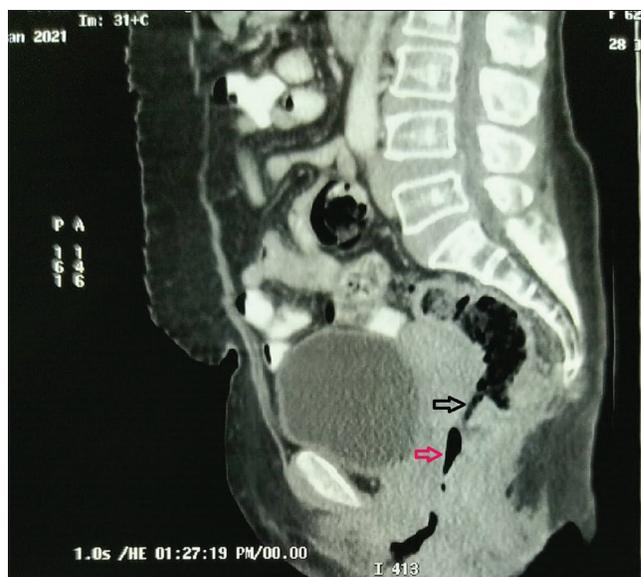
## DISCUSSION

RVF is an abnormal connection between two epithelial surfaces (the rectum and the vagina).<sup>[5]</sup> Patients with Stage IVa cervical carcinoma sometimes present with RVF or more frequently develop these fistulas after undergoing radiotherapy.<sup>[6]</sup> The patient in this case report had Stage IVa cervical carcinoma, an advanced tumor, and also underwent radiotherapy and chemotherapy. However, before radiotherapy her major concerns were those of irregular vaginal bleeding and intermittent constipation. The passage of feces through the vagina came to be a new presentation few weeks after radiation therapy.

The incidence of RVF following radiotherapy for cervical carcinoma is 7.6%.<sup>[3]</sup> In different literatures the period from



**Figure 1:** Barium enema revealed the presence of a fistula connecting the rectum to the posterior vaginal fornix. The cursor shows that the caliber of the fistula is 7.17 mm. The black arrow indicates the contrast in the cervical canal and the orange arrow points at the contrast within the uterus. A micturating cystourethrography had been done earlier and is responsible for the opacified urinary bladder.



**Figure 2:** In the sagittal reconstruction computed tomography scan the black arrow shows the diversion of hypodense rectal gas into a fistula which opens into the posterior vaginal fornix and outlines the vagina (pink arrow).

the time of commencing radiotherapy to the development of a RVF ranges from 7 to 24 months,<sup>[3]</sup> 6 months to 24 months,<sup>[7]</sup> and 5 months to 40 months, respectively.<sup>[4]</sup> Post-radiotherapy RVF is regarded as a late complication.<sup>[3]</sup> It was rather an early complication of radiation therapy in this patient as RVF occurred 1.5 months after the treatment started. This appears to be the earliest documented case of RVF complicating radiation therapy utilized for the management of cervical carcinoma.

Lebioda observed in his research that while FIGO staging of cervical cancer has no effect on the likelihood of developing RVF as a late complication, radiation dose may have a place but not as a catalyst to expedite the occurrence of RVF.<sup>[3]</sup> The patient still had five more courses of radiotherapy left which would suggest that the dose emitted to the primary tumor was within the normal range.

RVF can be classified based on its location, size and etiology, and morphology.

Classification based on location

1. High RVF is located between the middle third of the rectum and the posterior vagina, at the level of the fornix
2. Low RVF is located in the lower third of the rectum and lower half of the vagina. They are closest to the anus but lie above the dentate line
3. Middle RVF is located between high RVF and low RVF.

Classification based on size

1. Small-sized: <0.5 cm in diameter
2. Medium-sized: Between 0.5 and 2.5 cm in diameter
3. Large-sized: >2.5 cm in diameter.

Classification based on etiology and morphology

1. Simple fistulas – Small in diameter, low in location and caused by injury and infection
2. Complex fistulas–Large in diameter, high in location and caused by cancer, irradiation, inflammatory bowel disease, and large bowel diverticulosis.<sup>[5,8]</sup>

In terms of classification, the RVF in this patient can be described as a high RVF that is medium sized (7.17 mm in size) and complex (since it is high in location and caused by the combined effects of cancer and irradiation).

The pathogenesis of RVF formation is initiated by the loss of the rectal or vaginal wall integrity due to the ensuing inflammatory and neoplastic processes. Necrosis and break-down of mucosal surfaces are further aggravated by the progressive endarteritis obliterans inducing effect of radiotherapy. Erosion of the affected tissue layers progresses until the abnormal channel opens into another epithelial surface as a fistula.<sup>[2,5]</sup> This explicitly explains the likely sequence of events that occurred in the index patient. She had been experiencing difficulty in defecation probably because of the inflammatory response, in the rectum, to the neoplastic activity effected by cervical carcinoma.

The following clinical features may be seen; involuntary passage of fecal matter and gas through the vagina, intermittent discharge of mucus through the vagina, dyspareunia, vaginal bleeding, pains in the vagina, and pains while urinating.<sup>[2,5]</sup> Surprisingly patients with RVF may be asymptomatic<sup>[7]</sup> but this patient was not and experienced involuntary passage of feces whenever she defecates.

Infectious parameters are obtained in biochemistry results of patients with RVF.<sup>[5]</sup> This was not the case in this patient.

Radiological imaging plays a key role in establishing the site, course, and complexity of pelvic fistulas and cross-sectional imaging invaluable information for optimal pre-surgical planning.<sup>[2]</sup>

The presence of a fistula in Magnetic Resonance Imaging (MRI) depends on if it is filled with fluid, air or a combination of both. On T2-weighted images the RVF typically appears as a high signal intensity, fluid-filled, linear, or branching communication between the rectum and the vagina and if the fistula contains gas or fibrous tissues it will return a low signal intensity. The edematous walls of the fistula also appear hyperintense on T2-weighted images.<sup>[2,7]</sup>

The introduction of a vaginal or rectal gel, in MRI procedures, always improves the ease of demonstrating RVF.<sup>[7]</sup>

Three-dimensional computerized tomography (CT) reconstruction help to delineate the fistulous tract by the demonstration of hypodense air which passes from the rectum through the fistula to the vagina.<sup>[2,7]</sup> There was a reproduction of this classical appearance in the CT scan done for the patient where the rectal gas was seen to traverse the intervening soft tissue and emerge in the vagina. It may be useful to perform CT scan after filling the rectum with contrast material to detect a RVF.<sup>[2,7]</sup>

Barium enema shows the passage of contrast medium from the ano-rectal region through the fistula into the vagina.<sup>[7]</sup> This was the exact image obtained in the barium enema series done for the patient.

RVF's which develop from radiotherapy are difficult to repair surgically due to poor vascularity and ensuing tissue repair.<sup>[6]</sup> It involves treating the underlying disease that has caused the fistula, the fistula, and the complications of the fistula.<sup>[5]</sup>

Conservative/Medical management – This encompasses treating associated infections, complications, maximize the medical treatment of the underlying disease, and support the patient's general condition. In addition, Fibrin glue can be used to close the fistula in a non-surgical procedure. These options are open to high-risk patients' who are not fit for surgery or have a failed prior surgical approach.<sup>[5]</sup>

Surgical management – Simple measures like a draining colostomy is done to optimize local tissue integrity and treat infection.<sup>[5]</sup> The objectives of an ostomy are to divert feces from the fistula site to achieve infection control, manage fecal control in demented or bed-ridden patients, and prevent adhesions of intestines.<sup>[9]</sup> Fecal control management and diversion of feces away from the fistula site were achieved in the patient when a sigmoid colostomy was successfully done.

The surgical options for high fistulas employ either the laparotomic or laparoscopic techniques through the

abdominal approach while the low and middle fistulas are repaired through the perineum using the transvaginal and transrectal approach.<sup>[8]</sup>

Laparotomy technique was adopted for the patient since it is ideal for the surgical intervention of complex RVF. It is nevertheless invasive and this feature disqualifies some affected persons from utilizing the procedure.<sup>[8]</sup>

The time for surgical intervention should be at least 1 year from the onset of the RVF symptoms because by this time the inflammatory reactions of the tissues affected would have resolved or become minimalized. The primary malignancy will also be controlled within this period. This increases the chances of a successful surgical reconstruction.<sup>[5,8]</sup> In the patient an anastomotic procedure was planned to be done 18 months after the appearance of RVF symptoms.

In instances where a patient with RVF may not be able to withstand surgery, vaginal laparoscopic procedures, which are minimally invasive, can be carried out. These procedures employ the introduction of over-the-scope clips, covered stents, and endoscopic suturing.<sup>[8,10]</sup> Laparoscopic procedures are appropriate for patients with short-term survival.<sup>[10]</sup>

Patients return to their regular routines 2 weeks following the procedure but it takes several months for complete healing to take place. The healing process depends on the size of the fistula and how extensive the surgical intervention was.<sup>[5]</sup>

The complications that may arise are; life-threatening abscesses, fulminating septicemia, recurring fistulas, and mental morbidities.<sup>[5,10]</sup>

## CONCLUSION

We treated a patient with advanced stage cervical carcinoma who underwent radiotherapy and chemotherapy. She developed a RVF after 6 weeks of treatment as a complication of the therapeutic procedures. A RVF should be considered as an early complication of pelvic radiotherapy for cervical cancer even when the symptoms are mild.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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