

Vesicovaginal Fistula After Fourteen Years of Pelvic Radiation

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ABSTRACT

Radiation therapy is an effective treatment for cervical cancer. However, of various complications, irradiation sometimes can cause formation of fistula between vagina and bladder and or rectum compromising the quality of life. Pelvic radiation is the primary cause of delayed vesicovaginal fistula with incidence of 13% in well-resourced countries and 0.2% in low resourced countries. Majority of them become apparent 1.5-2 years after completion of radiotherapy and can occur even up-to 20-30 years after the original insult. A 63 years' female visited our outpatient department for involuntary loss of urine per vagina for 1.5 years. She had undergone radical hysterectomy and radiotherapy 16 years ago for an advanced cervical carcinoma. With positive dye test, she had vesicovaginal fistula with Goh classification of 1biii. She underwent simple fistula repair via vaginal approach. After three weeks of catheterization, successful closure was achieved.

Keywords: cervical carcinoma, fistula, radiation.

INTRODUCTION

Vesicovaginal fistula (VVF) is an abnormal connection between bladder and vagina which causes continuous involuntary urinary leakage through the vagina. It is one of the most onerous problems in female urology. VVF cases are like an iceberg in low resourced countries, as women stay hidden from society and are embarrassed to seek help. This is responsible for significant physical, social and psychological morbidity of women. It is estimated that at least 3 million women worldwide have untreated fistula.^{1,2} In low resourced countries, obstetric fistula resulting from neglected prolonged obstructed labor are common, whereas, in well-resourced countries, most of the fistula are associated with iatrogenic factors, surgery and radiotherapy or combined.³ Radiotherapy has become an imperative treatment in cases of malignancy; primarily of pelvis. Fibrosis is a common complication of radiation, and are highly appreciated in healthy tissues post radiation. Involvement of small and medium arteries causing obliterative endarteritis may cause tissue atrophy or necrosis, which may result in ulceration and formation of fissures. In a study by Hillary et al¹, of the 2055 fistula reported from well-resourced countries, 268 (13.0%) followed radiotherapy (with or without previous radical surgery); in comparison,

only 17/10 015 (0.2%) of fistulae seen in low resourced countries followed radiotherapy.¹The majority of fistula becomes apparent 1.5-2 year after termination of radiotherapy and maximum of 20-30 years post radiation.^{3,4} Hence, pelvic radiation is the primary cause of delayed vesicovaginal fistula. Many times presence of a typical radiation induced VVF is preceded by radiation cystitis, fever, and hematuria.³ Here, we present a case of a woman with post radiation VVF that appeared 14 years after radiation and resolved with simple fistula closure and three weeks of catheterization.

CASE REPORT

This is a case of 63 years' female who was seen at our outpatient department with complaint of involuntary loss of urine for 1.5 years unrelated to physical strain or urge. She was diagnosed as a case of cervical cancer Stage IIB 16 years ago. She underwent radical hysterectomy with 5 cycles of chemotherapy followed by radiotherapy for 30 days. She had no complaints until one and a half year ago. Physical examination with intravesical methylene blue instillation revealed an approximate 2 cm fistulous defect at ~ 4 cm from external urethral orifice, Goh 1biii. Ultrasonography findings were insignificant and a CT scan done ruled out any recurrence of malignancy. After anesthetic evaluation, she was planned for operative management. Cystoscopy guided ureteric catheter was placed in left side followed by a simple fistula repair via vaginal approach under spinal anesthesia. Intraoperatively, adequate exposure and mobilization of bladder was done after the excision of the scar

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to allow tension free closure in single layer with uninterrupted suture (Vicryl 3-0). Dye test at the end of the repair was negative and a 14F urethral Foley's catheter was placed. The patient made an uneventful postoperative recovery. The ureteric catheter was continued for a week and removed. The principle of 3D i.e. dry, drinking and draining were confirmed. On 21st day of repair, dye test with intravesical methylene blue instillation was done. No leakage of methylene blue was noted. Hence, urethral Foley catheter was removed and patient was discharged the following day. Upon follow up after a week, she had complaint of increased frequency of urination. Investigation showed a culture positive UTI and was treated accordingly. The patient remained continent with no fistula recurrence at one month follow up.

COMMENTS

Pelvic malignancy treatment either by surgery or radiation pose a risk of fistula development. The radiation induced fistula has a poor reputation among urologists, because fibrosis and vascular deficiency pose a challenge to good healing. Treatment for radiation induced VVF is extremely difficult due to extensive tissue loss, scar formation, fibrosis, and devascularization caused by irradiation. Maier et al reported that 1.24% (133/10709) of the patients who underwent radiation therapy suffered severe urologic complications such as VVF that required surgical intervention.³ Considering the high prevalence of cervical carcinoma and wide use of radiation therapy, the management of VVF becomes an important issue for modern female urology.

Eifel et al⁵ stated that overall risk of fistula formation was 3.1% at 20 years with approximately half the actual risk occurring in the first 2 years of the follow up. New occurrences were observed as late as 29 years after treatment. In our case, the patient developed VVF after 14 years of radiation exposure. Risk of fistula formation is doubled in patients who underwent extra fascial hysterectomy and pretreatment laparotomy or history of pelvic infection, pelvic surgery before or after treatment or >10 Gy of transvaginal irradiation. There is increased risk of major VVF and ureteral stricture in patients who received three or more 5 Gy fractions of transvaginal irradiation. Treatment with one or two fractions conferred no increased risk. Due to different standards of radiation therapy being implemented over last 40 years, it is difficult to state

the exact gray of radiation inducing fistula and group the patients accordingly. Carcinoma of cervix, vagina and rectum are most common malignancies to present with fistula. In addition, tissue loss associated with malignant disease itself may result in genital tract fistula. Hence, local recurrence of malignancy must always be considered. Multiple focal biopsies, upper urinary tract functions, intravenous pyelography helps to rule out involvement of ureters and kidney damage. Cystoscopy is a crucial method to demonstrate the location and size of the fistula as well as proximity to ureteral orifice. Cystoscopy done in our case revealed a fibrosed, contracted bladder and aided in placement of left ureteric catheter.

Every fistula is unique and requires an individualized approach, hence it is challenging to describe a standard fistula repair. Surgery must be avoided until an acute post radiation tissue response is progressing. Minimum timing of repair approximates 12 months since the fistula first appeared.⁶ Closure of fistula can be done in several steps by reducing the size of the fistula, which gives patient more time to recover well. Half of the patient are cured after one surgical procedure. The Hilton's series reported in 2012, of the 95% of patients with radiotherapy induced fistula were successfully closed after the first surgery.¹ However, subsequent repairs do not decrease the patient's chances to be cured and a cumulative rate of cure is still high. Pushkar et al³ reported that out of 210 patients of the study, 48.1% had primary radiation induced VVF repair, 39.8% of 98 patients had successful repair after secondary surgery, and 35% of 19 patients had successful closure after more than 3 attempts with overall 80.4% efficiency in closure.³ Failure of fistula repair is mostly due to continuing tissue reaction caused by radiation.

The vesicovaginal fistula surgical repair can be summarized in three points: excision of all scar tissues; splitting of vaginal and bladder layers; and the closure of the fistula without the overlapping of the suture lines.³ These steps were followed in fistula repair operation in our case too. However, radiation fistula presents with particular problems. The area of devitalized tissue is usually considerably larger than the fistula itself and the lack of tissue which can be mobilized is the main problem the surgeon faces. If repairs are attempted in layers, it is likely to slough off. Flap technique in such cases may be beneficial

using Martius labial fatty flap, rectus abdominis myocutaneous flap, seromuscular intestinal graft and combine gastric and omental segments.^{4,7} Latzko upper colpocleisis is preferable when the risk of ureteral damage during surgery is present due to significant scarring of vaginal and bladder walls and localization of the fistula close to ureteral orifices.³ Case of successful closure via conservative treatment with electrocoagulation and prolonged indwelling catheterization have been reported for a small nonmalignant uncomplicated VVF.⁸ Post-operative bladder drainage for radiation induced fistula should be continued for 21-24 days, and so was in our case. In cases of persistent leak, drainage can be maintained

for 6 weeks.⁶ Many a times, patients with radiation-induced fistula ultimately undergo urinary diversion either due to the complexity of the fistula itself, poor tissue viability, anesthetic issues, or surgeon preference.¹

CONCLUSIONS

Management of every fistula case should be individualized. In cases with VVF post radiation, recurrence of malignancy must be ruled out. The majority of cases can be treated with vaginal approach with simple fistula closure technique followed by urinary bladder catheterization for 3-6 weeks.

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