



**ORIGINAL RESEARCH PAPER**

**Plastic Surgery**

**RECONSTRUCTION OF EXTENSIVE GLUTEAL FAT NECROSIS FOLLOWING RADIOTHERAPY FOR PROSTATE CANCER- REPORT OF TWO CASES**

**KEY WORDS:** Gluteal Necrosis, Radiotherapy, Prostate Cancer, ionizing Radiation.

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**ABSTRACT**

Radiotherapy which has been found to be an important component of modern cancer therapy is not without its own side effects. These side effects can manifest in form of gastrointestinal, genitourinary symptom and cutaneous ulcers among others. The cutaneous ulcers are usually recalcitrant to common ulcer management. This report presents two cases of extensive gluteal skin and fat necrosis following radiotherapy for localized prostatic cancer. The ulcers were radically debrided and subsequently covered with local flaps. The ulcers healed satisfactorily without complications. Radical debridement and local tissue cover can be an option for the management of radiation induced skin necrosis.

**Introduction:**

Radiotherapy is an important part of modern cancer therapy which can either be as a sole agent or in combination with other forms of therapy. In spite of its usefulness, its deleterious effects are of great concern to surgical practice. These adverse effects can manifest in acute, sub-acute and chronic forms and it can affect skin and structures under the skin to any extent depending on the frequency of the ionizing radiation. Acute and late gastrointestinal (GI) and genitourinary (GU) complications are common side effects observed in prostate cancer patients following radiotherapy<sup>1,2,5</sup>. It has indeed been observed that Conformal techniques significantly lowered the risk of late radiation-induced proctitis after radiotherapy for prostate cancer<sup>2</sup>. Gluteal fat necrosis as a result of radiation therapy for prostate cancer is rare and hence the current report. The aim of this report is to show cases of extensive gluteal skin and fat necrosis following radiotherapy and outline the management of this rare complication.

**CASE PRESENTATIONS**

**Case 1**

OA is a 62year-old business man who had been diagnosed as having prostate cancer following a routine Serum prostatic antigen screening and a subsequent prostate biopsy. The biopsy confirmed the suspicion of the PSA of 28ng/L. There was no evidence of metastasis to any other part of the body. The patient was subsequently counseled for radiotherapy.

He had radiotherapy and developed acute complication of severe proctitis, scrotal and penile oedema and urinary incontinence. Both symptoms of proctitis and bladder complications improved subsequently. He however noticed a change in colour of the skin of the sacral area with a breakdown of the area over the sacrum. There was associated severe pain which disturbed him from sleep and his daily routine with loss of weight. He had presented to a private hospital where he had some debridement. He presented to our unit as a result of delayed healing of the wound.

Examination revealed a middle aged man who was apprehensive, afebrile and not pale. Genitourinary system examination revealed a grossly swollen scrotum and penis with no skin colour changes. Examination of the gluteal region revealed a triangular shaped ulcer, which measured 5cm by 4cm with a necrotic floor and slightly undermined edges, the floor was dry with no exudation observed. There was hyperpigmented skin of between 6-8 cm, surrounding the ulcer which was firm to hard on palpation and severe tenderness.

There was good anal hygiene and the rectal sphincter had good tone. Prostate gland was flat with no area of firmness.

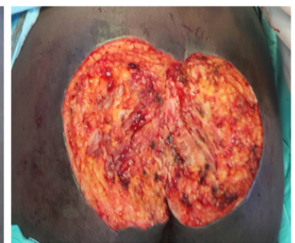
The level of PSA at presentation was 0 ng/L. The wound was

debrided until exposing normal looking tissues. The wound was packed with providone iodine with which it was dressed daily for about three weeks when the slough was again observed. A repeat debridement with dressing did not yield a better result (Fig 1a).

Fig. 1a



Fig. 1b



**Fig 1:** Appearance of ulcer following minimal debridement (1a), and after aggressive debridement (1b). Note the necrotic floor and the change in surrounding skin colour before aggressive debridement.

He subsequently had a wide excision of all the hyperpigmented skin as well as the underlying tissues down to the muscles with a width of about 10cm on either side from the mid line (fig 1b). The wound was dressed for a couple of weeks with alginate and providone iodine. Wound was subsequently closed with the assistance of bilateral rotation skin flaps from the inferior gluteal folds. This healed perfectly with minimal complication of a partial breakdown which was left to heal by secondary intention (Fig 2a).

• 2a



• 2b



**Fig. 2:** Appearance of the buttock after closure of radiation ulcer with bilateral rotation advancement (a) and V-Y advancement fasciocutaneous flaps (b).

**Case 2**

A 70year old retiree, known hypertensive and diabetic, presented with complaints of non-healing sacral ulcer of 3-months duration. Onset was heralded by loco regional radiotherapy which he had for organ confined carcinoma of the prostate. Ulcer progressively

increased in size with associated purulent discharges and surrounding skin changes despite repeated debridement and wound dressings.

Examination revealed a huge sacral ulcer, butterfly shaped, measured about 24cm by 20cm by 10cm, floor contained unhealthy granulation tissue with slough and neurotic tissue, sloping edge, indurated and hyperpigmented surrounding skin.

An assessment of radiation sacral ulcer was made. Preoperative evaluation was done and he had serial surgical debridement and subsequent excision of sacral ulcer with gluteal fasciocutaneous V-Y advancement flap (fig.1b&2b). He was nursed in left lateral decubitus position. Flap remained viable with no flap necrosis. No functional deficit of the gluteus maximus was observed. The wound drain was retained till the 14<sup>th</sup> post-operative day.

**DISCUSSION AND LITERATURE REVIEW**

Radiotherapy is an acceptable form of treatment for localized prostate cancer. However, late chronic side-effects limit the dose that can be given, and may be linked to the volume of normal tissues irradiated<sup>2</sup>. In spite of advancement in radiation technology, such as intensity-modulated radiation therapy (IMRT), radiation injuries are still a major problem in clinical practice<sup>3-4</sup>. The severity of the injury depends on the dose level incurred, the dose rate, the radiosensitivity of the tissues involved, the area of the body exposed and the extent of exposure suffered by the organ system<sup>5</sup>. The delayed radiation induced injuries can occur several years after the therapy<sup>6-8</sup>

Reported results of conservative management have not been encouraging due to poor blood supply, persistently high concentrations of matrix metalloproteinases, and extensive fibrosis in the surrounding tissues<sup>9&10</sup>. Serial debridement initially done for both patients did not result in improvement until radical debridement was done and all dead or dying tissues removed and reconstruction later done. Conventional management of severe radiation injuries involves surgical excision of damaged tissue and reconstruction<sup>11&12</sup>. However, successive inflammatory waves often lead to impairment and necrosis of the newly reconstructed tissues. Therefore, majority of severe radiation tissue injuries require successive surgical excisions and reconstructions with highly vascularized tissues as was done in these patients<sup>11&12</sup>. Overall, the healing of radiation injury is extensive and unpredictable.

The choice between local and distant flap depends on the location of the ulcer, surrounding tissue and the general condition of the patient. Local tissues were used in these two reported cases because the ulcer bed was satisfactorily vascularized after series of debridement coupled with lack of facilities for microvascular surgery in our centre. Both cases did well post-operatively and were discharged to the outpatient clinic for follow-up.

We conclude that the dose and frequency of treatment when patients have to go through external beam radiotherapy must be reviewed. Instructions on the care of the skin needs to be emphasized. This will reduce the complications of tissue necrosis following radiotherapy for prostate carcinoma.

**Declaration of conflicting interests.**

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