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V-Y advancement flap for vulval reconstruction: Case series

Dr. Krishna Prasad Prusty
Associate Professor, Department of Surgery, Gitam Institute of Medical Sciences and Research, Rushikonda, Vishakhapatnam
Corresponding author email: drkrishna27@gmail.com

Dr. Potnuri Radhika
Assistant Professor, Department of Surgery, Gitam Institute of Medical Sciences and Research, Rushikonda, Vishakhapatnam

Dr. Mahendrakar Sujatha
Assistant Professor, Department of Surgery, Gitam Institute of Medical Sciences and Research, Rushikonda, Vishakhapatnam

***Abstract*---**Introduction: Invasive vulvar carcinoma is an infrequent cancer among females and it accounts for about 4% of all gynaecological cancers. Median age of diagnosis is late sixties or early seventies. 5 year survival is approximately 85% in early stage disease (stage I/II).[1] It is associated with low socioeconomic status, poor personal hygiene and Human Papillomavirus (HPV) infections. Materials and methods: This is a retrospective, descriptive, purposive, institutional study with no randomization of the study subjects using convenience sampling. Over 1 year (August, 2020 to July 2021) we operated on CA vulva involving labia majora, minora, clitoris, mons and fourchette in 10 patients at the Department of Surgery, Gitam institute of medical sciences and research, Rushikonda, Vishakhapatnam. Photographs of the surgical steps were routinely taken and archived after complete anonymization. For advance postoperative chemoradiation some patients were treated in conjunction with the Radiotherapy department, as per the wishes of the patients. Retrospectively the data was analysed and the cases being followed up on long term basis at OPD. Results: Among the 10 study female patients with CA vulva extirpation and reconstruction, mean age was 64.9 years (ranging from 59 to 70 years). Comorbidities of systemic hypertension and diabetes were present in 50% and 30% of the cases respectively. The sites of the tumour resection were predominantly labia majora in most cases with bilateral involvement seen commonly in 70% of our cases. 6 cases (60%) belonged to Stage II malignancy while the other 4 cases (40%) belonged to Stage IIIA.

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Modified radical vulvectomy was done in Stage II diseases (60%), Radical vulvectomy in Stage IIIA ones (40%) and inguinal lymph node dissection in 80% cases. Conclusion: Reconstruction of Vulva following extirpation of malignancy requires a holistic multidisciplinary approach and involves a wide array of reconstructive options tailored to each specific case to achieve better wound coverage, escalated wound healing and disease free survival, preserving the form and function.

***Keywords*---**invasive vulvar carcinoma, human papillomavirus, radical vulvectomy.

Introduction

Invasive vulvar carcinoma is an infrequent cancer among females and it accounts for about 4% of all gynaecological cancers. Median age of diagnosis is late sixties or early seventies. 5 year survival is approximately 85% in early stage disease (stage I/II).[1] It is associated with low socioeconomic status, poor personal hygiene and Human Papillomavirus (HPV) infections. Approximately 40% vulvar cancer worldwide have been attributed to HPV infection.[2] Other risk factors are cigarette smoking, inflammatory conditions like lichen sclerosis, immunodeficiency etc. More than ninety percent of vulvar cancer is squamous cell carcinoma. Other uncommon histopathologic types are melanoma, adenocarcinoma, basal cell carcinoma, sarcoma etc.[3]

Surgical treatment of CA vulva entails close coordination between the extirpative and reconstructive surgeons, as well as involves the radiation and medical oncology teams in a multidisciplinary approach. There are several factors taken into consideration while reconstructing the defects following extirpation, like the patient's age, sexual function, wishes, compliance, stage of the disease, need for adjuvant chemoradiation etc. An array of reconstructive options are available and are advocated as per the nature and extent of the ablative surgery involving common principles of obliterating the pelvic dead space, separation of intra-abdominal contents from the perineum to ensure escalated and uncomplicated perineal wound healing. Planning of incisions and excisional margins and the extirpative procedures of simple or radical vulvectomies are decided by the extirpative surgeons in presence of the reconstructive team to maximise the reconstructive options while not compromising oncologic clearance. The regional blood supply, condition of the adjoining skin and the donor site, the probable donor area morbidities and plan B are taken into consideration by the reconstructive team. [4-9]

Materials and Methods

This is a retrospective, descriptive, purposive, institutional study with no randomization of the study subjects using convenience sampling. Over 1 year (August, 2020 to July 2021) we operated on CA vulva involving labia majora, minora, clitoris, mons and fourchette in 10 patients at the Department of Surgery, Gitam institute of medical sciences and research, Rushikonda,

Vishakhapatnam. Photographs of the surgical steps were routinely taken and archived after complete anonymization. For advance postoperative chemoradiation some patients were treated in conjunction with the Radiotherapy department, as per the wishes of the patients. Retrospectively the data was analysed and the cases being followed up on long term basis at OPD.

Pre-operative assessment and planning

Patients with Stages II and IIIA malignancy, aged between 50 to 70 years, without any co-morbidity of peripheral vascular disease, connective tissue disorders, atherosclerosis, uncontrolled diabetes and hypertension and psychiatric disorder, were included in this study. They were counselled, informed consents taken, pre anaesthetic check up done.

Before the scheduled operation, the admitted patients were clinically assessed and planned again by the Oncosurgery and Plastic surgery teams together with detailed discussions in terms of nature and extent of tumour ablation, need for groin dissection as per the imaging (MRI or CT scan of the local part) and preoperative incisional biopsy reports. Local adjoining and regional areas were carefully inspected, known vascular axis and perforating vessels identified and marked with hand held Doppler as per the primary reconstruction planned. Every patient was discussed at multi-disciplinary tumour board and a management plan was documented.

Operative steps

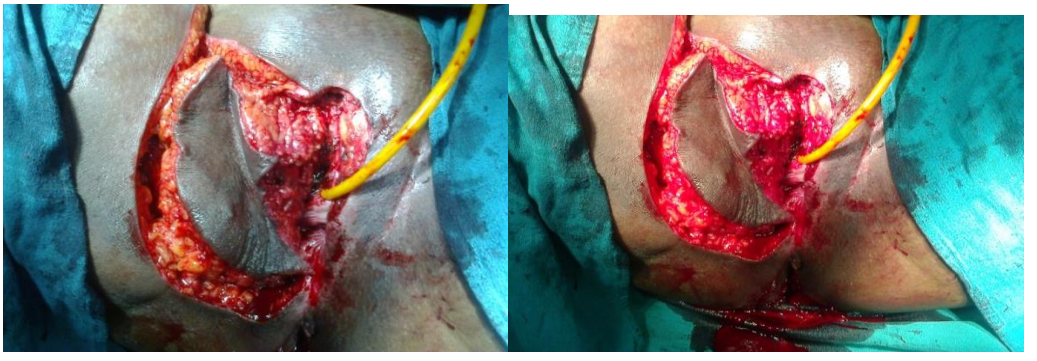
General anaesthesia with endotracheal intubation or epidural anaesthesia was advocated with the patients in lithotomy position. Foley's catheterization was done per urethra in every case. The inguinal dissection (if needed) was done in the beginning as per stage of the malignancy and involvement of inguinal lymph nodes; thereafter the wide local excision (mostly with a butterfly shaped incision for bilateral lesions or with 3 separate incisions) done with a margin of 1cm (as per literature in some studies it was advised to have a marginal clearance of 1.5cm). [5] Then a template of the defect was made with sterile lint piece to ascertain and confirm the dimensions and reach of the flap marked preoperatively so that adequacy of the tissue and over lining skin as lining were maintained.

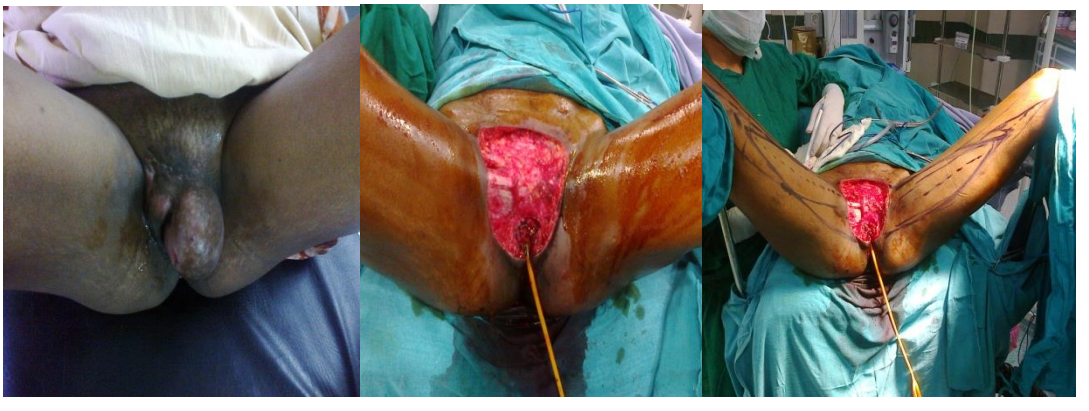
Post-operative care

The flaps were monitored clinically (with the parameters of colour, temperature, turgor and capillary refill) postoperatively every 6 hourly for the first 24 hours and twice daily for the next 3 days. The average time of hospital stay postoperatively was 5 days. Enteral feeding was started on the second post-operative day. Foley's catheter was retained for the first 1 week and the patients were encouraged to mobilize and ambulate gradually after 3 days onwards with daily changes of dressings. The skin sutures were removed on an average after 2 weeks postoperatively. The patients were subsequently followed up at OPD at 2 weekly intervals, referred to Radiation and Medical oncology for the first 2 months and at monthly interval thereafter.

Results

Among the 10 study female patients with CA vulva extirpation and reconstruction, mean age was 64.9 years (ranging from 59 to 70 years). Comorbidities of systemic hypertension and diabetes were present in 50% and 30% of the cases respectively. The sites of the tumour resection were predominantly labia majora in most cases with bilateral involvement seen commonly in 70% of our cases. 6 cases (60%) belonged to Stage II malignancy while the other 4 cases (40%) belonged to Stage IIIA. Modified radical vulvectomy was done in Stage II diseases (60%), Radical vulvectomy in Stage IIIA ones (40%) and inguinal lymph node dissection in 80% cases. The mean size of defect created after excision of tumour was 7 x 4.2 cm length and breadthwise. Average flap dimensions were 6.5 x 4 cm length and breadth wise. Mean operative time was 3.5 hours for wide local excision, groin dissection (if applicable) and reconstruction. Median blood loss was 100ml. Final histopathology report was Squamous cell CA (well to moderately well differentiated) in all cases with resection margins greater than 1 cm beyond the tumour all around. Mean post-operative hospital stay was 5 days. Among the complications partial flap necrosis (for a unilateral lotus petal flap) was reported in 1 patient (10%) due to arterial insufficiency on 2nd post-operative day and wound dehiscence was present in 2 patients (20%). The wound complications were managed with regular dressings and healed by secondary intention. There was no incidence of fistula with bowel or bladder. Adjuvant radiation was given in 80% cases post-operatively and well tolerated without any flap complications at a mean follow up of 3 months. There was no recurrence noted in any case at 3 monthly follow up.





Figures: Vulvar reconstruction

Discussion

Vulvar reconstruction is a very challenging job. The complex three dimensional shape is difficult to recreate. Flaps of any type are bulky and skin grafts are prone to graft loss owning to the shearing forces, contamination and bowstringing. Vulva, being situated just adjacent to groin creases, is subjected to constant movement and shear during movements and ambulation. The proximity to urine and faeces contaminates the wound and causes wound infection.[6] Previous surgeries and radiotherapies lead to scarring and compromised vascularity of the adjoining area. It is also a dependent area that is prone to swelling and is difficult to dress. Presence of comorbidities and elderly age with immunocompromised status add to the difficulties.[7]

The main objective of the reconstruction is to create an adequate sized sensitive skin fold that resembles the appearance of labia majora, tension free skin closure, with good quality tissues, maintenance of vaginal and urethral introitus without shrinkage and deviation from their central position, restoration of the anovaginal partition, and simultaneous closure of associated defects, such as mons pubis or inguinal defects if necessary while in half-vulvar reconstructions, it is important to obtain symmetry with the contralateral side. Secondary goals include sensate reconstruction, sexual function, cosmetic restoration of external shape, and minimal flap donor site morbidity. It is important to guarantee the presence of a wide orifice for the vagina, if preserved, to avoid alteration for micturition and to allow the restoration of sexual activities.[8]

In our study, the mean age of patients was 64.9 years (ranging from 59 to 70 years) compared to other studies with median age of 69 years, ranging between 25 to 93 years and mean age of 78 years, ranging between 39 to 89 years. We included only patients with defects following extirpation of malignancy of vulva while other studies incorporated malignancy in 78% cases and other pathologies like trauma and infection in other cases. Comorbidities of systemic hypertension and diabetes were present in 50% and 30% of our study cases respectively while 11% and 30% respectively in another study. 60% of our cases belonged to Stage II malignancy and 40% belonged to Stage IIIA as opposed to other studies where Stage I disease comprised of a majority of 70%. In our study, simple vulvectomy

was done in 60% cases, Radical vulvectomy in 40% cases and inguinal lymph node dissection in 80% cases compared to other studies where simple vulvectomy was done in 30% cases, partial Radical vulvectomy in 55% cases and Radical vulvectomy in 15% cases. The mean area of defect created after excision of tumour in our study was 29.4 square cm while 30 square cm in another study, almost identical.[9]

Mean operative time was 3.5 hours in our study while 3 hours and 3.3 hours as per other studies. Median blood loss for all surgeries in our study was 100ml while 50 ml as per another study. Final histopathology report was Squamous cell CA (well to moderately well differentiated) in 100% cases in our study while 81% in another study while epidermoid carcinoma was predominant in 86% cases as per another study. Mean post-operative hospital stay in our study was 5 days while 3 days as per another study. Among the complications we encountered partial flap necrosis, reported in 1 patient (10%) and wound dehiscence, present in 2 patients (20%) as compared to other studies where the reported flap survival was 100% with no flap necrosis but primary wound healing complications were 33% and 15%. There was no recurrence noted in any of our case till 3 monthly follow up, similar to another study.[10]

Conclusion

Reconstruction of Vulva following extirpation of malignancy requires a holistic multidisciplinary approach and involves a wide array of reconstructive options tailored to each specific case to achieve better wound coverage, escalated wound healing and disease free survival, preserving the form and function.

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