Research Article

The CV Flap for Nipple Reconstruction: Short Term Outcomes and Patient Satisfaction

Romana Akhlaque,[1] Junaid Ahmad,[2] Nabila Naz,[3] Maham Iftikhar[4]

[1,3,4]*Lahore General Hospital, Lahore*
[2]*Jinnah Burn and Reconstructive Surgery Center, Lahore, Pakistan*

Abstract

Background: Due to an increased incidence of breast cancer in younger patients, breast reconstruction after mastectomy is now an emerging super specialty in Pakistan. Nipple and areola needs to be reconstructed as a completion procedure after creation of an aesthetically pleasing breast mound.

Methodology: It was a prospective cohort study which was conducted at PGMI/ AMC/ Lahore General Hospital, Lahore for duration of one year. Standard CV flaps were used in all cases. Flap survival and complications were observed. The projection of the nipple was measured in all cases. The patient satisfaction was scored using Visual Analogue scale.

Results: We have done 10 cases of Nipple Reconstruction with CV flap in breast reconstruction and burn breast cases. The nipple projection was 10.2mm on average. No major complication was observed. All patients were satisfied with an average of 9 at 1-10 scale.

Conclusion: The nipple reconstruction with the CV flaps is simple and reliable technique with high satisfaction rates in patients of breast reconstruction.

Received | 20-01-2023: **Accepted** | 28-02-2023
Corresponding Author | Roomana Akhlaque ; Assistant Professor and HOD of Plastic Surgery, PGMI/AMC/LGH..
Email: [roomanaakhlaque@gmail.com]
Keywords | Nipple reconstruction, CVFlap, Breast reconstruction.

Introduction

Nipple reconstruction is part and parcel of breast reconstruction.[1] The Breast reconstruction after cancer, post burn breast contractures with burnt out nipple areola complex and massive gigantomastia are few types of cases where we deal for the nipple reconstruction. Nipple reconstruction can be done by various methods.[2,3,4] Nipple reconstruction with or without are olar tattooing is the final and defining feature of the female breast.[5] Improved physiological well-being and improved patient satisfaction has been reported in cases where timely reconstruction of NAC was considered.[6,7]

The aim of reconstructing the neo-nipple is creation of an aesthetically pleasing nipple bud which is symmetrical to contralateral nipple with minimal scarring and donor site morbidity. A number of reconstructive procedures have been described in the literature which itself reveals the fact that not even a single reconstructive procedure has been able to achieve the desired outcome from the surgeon's as well as the patient's perspective. However, the evidence regarding an increase in the use of local flaps for the neo-nipple creation reveals that this is the favored modality in terms of ease of technique and long terms outcomes.[8]

The selection of technique for nipple reconstruction usually depends on the individual experience of the surgeon and choice of the patient.[8] Nipple can be reconstructed using different reconstructive modalities, the grafts, local flaps, combination of flap and grafts, cartilage grafts, Alloderm, fillers, bone cement, silicone and other materials have been reported in the literature.[2] 3D tattoos for nipple and areola or combination of flaps for nipple and tattoo for areola[3] and artificial nipples are also used to camouflage deformities.

The longevity of the procedure in terms of maintenance of projection of neo-nipple is the single most important factor in determining the success of the selected procedure and patient satisfaction. There are multiple factors which affect the long term outcome of NAC reconstruction e.g. the type of reconstruction (autologous versus implant based reconstruction), patient tendency towards hypertrophic scarring leading to scar contracture, history of previous radiotherapy.[8] The technical factors such as poor selection of technique, inappropriate flap design that compromises the circulation leading to delayed healing and infection also can affect the longevity of reconstruction.

Local flaps have multiple advantages. Being autologous; it replaces the like with the like, is cost effective (All odermor fillers are expensive) and unlike artificial nipples they are part of body and gives a feeling of self. There are multiple flaps available to reconstructa nipple[1,2] from simpler to complex. The CV flap, skateflap,[9] star,[10] double opposing tab flap[11,12] double opposing V-Y flap and V-Y advancement flap,[2] have all been reported in the literature with variable success.

We have chosen CV flap for nipple reconstruction in all of our cases. The author feels that it is simple, reproducible, and gives good projection of the nipple as it involves complete elevation of the C and V flaps which are then folded over each other while maintaining the vascularity at the base of the flap. The closure of the donor site at first followed by flaps insetting further helps to maintain the nipple projection.

Methodology

It was a prospective cohort study which was conducted at Lahore General Hospital between June 2018 to May 2019. We used the non-probability convenience sampling technique for data collection. All cases were done by the senior author. Each nipple reconstruction was done with flap based reconstruction using a CV flap.

The procedure was done under local anesthesia as day case procedure. At the day of surgery, the patient was advised to come with the proposed site of nipple are olar complex marked by herself while standing in front of a mirror. Normal side of nipple projection was measured and opposite side was marked for CV flap. The flap was raised including five to seven millimeters of subcutaneous tissue along with the flap(depending upon the contralateral nipple diameter and projection). The donor site was first closed with 5/0 monocryl followed by insetting of V flaps and C flap using 5/0 monocryl sutures. Steri strips were applied followed by the dry gauze and water proof non-crushing dressing with a window so that the viability of the reconstructed nipple could be monitored. The patient went home the same day. Follow up was carried out at seven and fifteen days, three weeks and six weeks postoperatively. Early postoperative complications like infection, wound dehiscence, partial or total flap necrosis were recorded.

The end point of follow up for this study was the complete wound healing and assessment of nipple projection at three and six weeks. Subjective assessment was done using the Visual analog scale. Patients were asked to scale satisfaction with the procedure ranging from 1-10 with 1-3 counted as poor satisfaction, 4-6 as satisfactory and 7-10 as high satisfaction and willing to recommend this procedure to others).

Objective assessment was done by measuring the height and diameter of reconstructed nipple with the help of Vernier caliper. We kept a record of nipple projec-tion by repeated follow up at three months, six months and then yearly for five years after the nipple reconstruction to evaluate the long term outcome of the procedure.

Results

Ten cases (n=10) underwent nipple reconstruction with CV flap in our department during study period. Six (60% n=6) out of ten patients had undergone autologous breast reconstruction with extended LAD. One 10% (n=1) patient had implant based breast reconstruction (sub muscular), and three patients 30%(n=3) were cases of post burn breast contracture release and split thickness skin grafting, followed by a nipple reconstruction. (Table 1). All of the ten 100% (n=10) Nipple reconstructions with CV flap had uneventful recovery. All of the ten (100% n=10) flaps survived. Even in the three cases of post burn breast contractures, where resurfacing was done with split thickness skingrafts, the flap survival was hundred percent. Minor wound complications like partial necrosis, infection leading to wound dehiscence was not observed in any of the cases. Inflammation at week six was found in one case 10% (n=1) and itching in one 10% (n=1) case. One case with nipple projection loss was found at week six 10%(n=1). Table 1 Nipple projection at the end of three to six weeks was measured and ranged from 6.5 mm to12mm with an average of 10.2 mm. Patients were asked to rate their satisfaction according to visual analogue scale mentioned previously. Nine out of ten rated as high (90% n=9) and one rated it as good 10% (n=1). Figure 1 to 5 demonstrate the technique on a representative patients.

The patient satisfaction by Visual Analog scale ranged from 6 to10 with an average of 9.

Table 1: *Type of Breast Reconstruction*

	Cases (n)	Percentage
Autologous Reconstruction with extended LADflap	6	60%
Post burn breast contracture Release and Skin Grafted	3	30%
Implant based breast reconstruction(submuscular)	1	10%
Total number of cases(n)	10	

Table 2: *Complications withCVflap*

No of patients with complication(n)		Percentage
Inflammation/redness	1	10%
Itching	1	10%
Partial flap loss	0	0%
Total flap loss	0	0%
Loss of projection	1	10%
Total number of complications in patients	3	30%

Table 3: *Visualanalogue scale scoring for results*

Number of patients (n)		Percentage of patients
High satisfaction(7-10)	9	90%
Good(4-6)	1	10%
Poor(1-3)	0	0%
Total number of patients(n)	10	

Figure: 1 : *Pre- op Oblique view*

Figure: 2: *Pre-op frontal View with Marking*

Figure 3: *Per op Frontal view*

Figure 4: *Post op frontal view*

Figure 5: *post of frontal view*

Discussion

The CV flap has been shown to produce good results since its introduction in 1998 with the rates of patient satisfaction ranging from low to high.[13,14] In our study, we report high rates of satisfaction in short term follow up of three to six weeks. Majority of patients reported improved psychological well-being and greater patient satisfaction. Nipple reconstruction was also regarded

as sense of completeness of their body image in almost all of the patients.

We have not encountered complications like wound dehiscence, partial or total flap necrosis. Inflammation with erythema was recorded in one patient which was settled with oral antibiotics without further delaying wound healing,[15] also reported lower rats of wound infection of 0.8percent.

In our study, one out of ten patients had implant based reconstruction. The nipple projection in this case was 6.5 mm at the end of three weeks which was lower than all the other cases which had elegantly maintained the nipple projection at the end of three weeks.

The high rate of satisfaction in all cases depicts the impact of nipple reconstruction on psychological wellness of the patient.[16] Because in the case of nipple reconstruction in implant based breast reconstruction, the author was not satisfied with the outcome but the patient still scored[6] in visual analog scale.

Conclusion

The nipple reconstruction with the CV flap is a simple and reliable and reproducible technique with the short learning curve. However, the projection of nipple was better in autologous reconstruction as compared to implant based reconstruction. Furthermore, the technique has shown good results in post burn breast cases where the skin grafts with subcutaneous tissue were used to create the flaps.

Conflict of interest *None*

Funding Source *None*

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