Versatility of V-Y Flap in Gluteal Area

Ahmed El-Sabbagh*

Department of Plastic Surgery, Faculty of Medicine, Mansoura University, Mansoura City, Egypt

*Corresponding Author:
Ahmed El-Sabbagh, MD; Assistant Professor of Department of Plastic Surgery, Faculty of Medicine, Mansoura University, Mansoura City, Egypt
E-mail: elsabbagh17@hotmail.com
Received: August 22, 2015
Revised: November 11, 2015
Accepted: December 12, 2015

ABSTRACT

BACKGROUND
Lesions in perineal area are common. The usual treatment is coverage by skin graft and flaps which may be local, pedicled or free types. In this paper V-Y flaps were used to cover the defects.

METHODS
V-Y flaps were used in the gluteal area in 15 patients. Lesions were due to different causes.

RESULTS
Of 15 patients, 11 were males and 4 were females. Their ages ranged from 3 weeks to 52 years old. Two cases were due to myelomeningocele, necrotizing fasciitis (2 cases) and the rest were due to bed sores (11 cases). The flaps were located over the trochanter (3 cases), ischial (6 cases) and sacral (6 cases). Good healing and durable coverage were obtained in all cases except one case.

CONCLUSION
V-Y flap as a working horse flap is recommended in the gluteal area.

KEYWORDS
Gluteal area; Lesions; V-Y design

Please cite this paper as:

INTRODUCTION
Lesions in gluteal area secondary to congenital, traumatic, infectious, neurologic or ablative surgeries require reconstructive procedures. Different techniques have been described utilizing all the reconstructive ladder.¹⁻³ The use of local flaps is not a simple procedure. Availability of a pedicle near by the defect with an adequate territory to cover and fill the defect without donor defect is not the common scenario.

The V-Y advancement flap was credited by Dieffenbach in 1845. Later, changes made to the design including the triangular form, opposed shape, multiple flaps, and a Pacman flap design.⁴⁻⁶ Also, V-Y flap may be part of other flaps like the Manta Ray flap, five flap or cone flap.⁷⁻⁹ The V-Y advancement flap has been used extensively in face, trunk, and limb reconstruction.¹⁰⁻¹² The aim of this study was to optimize the use of V-Y flaps for reconstruction of the gluteal area with closure of donor site primarily in one stage procedure.
MATERIALS AND METHODS

Between October 2012 and August 2015, fifteen patients were operated with V-Y flap for lesions in perineal areas. Each patient received a full surgical explanation and a written consent was obtained. A separate informed consent for photography was obtained from all patients. The lesion was carefully cleaned and all diseased tissues and bursa were excised. Any bony prominence was carefully removed. V-Y flap was used unilaterally or bilaterally according to the size of the defect.

The perforator was identified by the help of Doppler probe and the fascia was incised to the underlying muscle. The distal edge of the rotation flap was de-epithelialized and buried under the distal edge of the defect to ensure complete filling and obliteration of the defect. Cone flaps were used for trochanteric defects. Starting with the first component of the cone flap, as a rotation flap to cover the primary defect. The second component was a V-Y flap to close the donor site (Figure 1).

For ambulatory patients, full mobilization were allowed after the 10th postoperative operative day. Suction drains were removed when the drainage amount decreased below 25 ml per day. The cases were followed up twice during the first 2 weeks. After the 1st month, patients were followed every month for 6 months. This study has been performed in accordance with the ethical standards set forth in the 1964 Declaration of Helsinki and its later amendments. Informed consent was obtained from all parents responsible for participants included in the study.

RESULTS

Of 15 patients, 11 were males and 4 were females. Their ages ranged from 3 weeks to 52 years old. Two cases were due to myelomeningocele, necrotizing fasciitis (2 cases) and the rest were due to bed sores (11 cases). The flaps were located over the trochanter (3 cases), ischial (6 cases) and sacral (6 cases). V–Y (Unilateral or bilateral) or cone flap was used sufficiently for closure of the defect in every patient. Median operative time was 60 min (45–90 min) for the unilateral V–Y or cone flap and 90 min (60–120 min) for the bilateral V–Y flap group. None of the patients developed flap necrosis, local hematomas or seromas except one case (Figures 1-4).

A 42 year-old overweight woman presented with big sacral bed sore occupying the entire buttock associated with bilateral trochanteric

Fig. 1: a. Patient with trochanteric pressure sore, b. Elevation of the rotation flap on its pedicle, c. Postoperative with complete healing of the flap
pressure sore. The patient was diabetic (on oral hypoglycemic) and paraplegic (history of stroke with previous deep venous thrombosis). The patient underwent bilateral V-Y flaps to cover the sacral pressure sore. After one week, the patient started to develop disruption in the center of the wound. Then, for successive 3 weeks, flap necrosis, seromas and hematomas developed in the wound. The wound was managed conservatively till infection subsided with complete disruption of the wound (Figure 5).

DISCUSSION

One of the distinct differences in gluteal reconstruction compared with lower extremity reconstruction is the effectiveness of local pedicled flaps in this region. The gluteal area
is liable to considerable pressure in all positions (sitting and recumbent). Even during walking, motions can make tension across the incision lines. Urinary and fecal contamination add additional risk factor for wound healing.14

The gluteus maximus muscle is the commonest flap. It can be designed as an advancement, rotation flap, island flap, or split flap. The decision depends on the size of the defect. Also, the superior gluteal artery flap had been used. However, this flaps needs learning curve and cannot be used again in recurrent cases.15-17 The gracilis muscle flap has its place for reconstruction of ischial area. It can be used as a vascular conduit for the skin island or the muscle itself can be used with some modification.18,19

Like other flaps, it cannot be used again and confined to the ischial area.

As regard the tensor fascia latae flap, it was used extensively for the trochanteric area.20 Possibility of skin graft to the donor site, limited arc of rotation and cannot be used again are limitations for its use. In this work, Cone flap was ideal for the trochanteric area, where the donor site is a problem due to presence of septa. Closure of the defect with a rotational flap based on an audible perforator without any tension is mandatory for successful reconstruction. Then the V-Y flap was harvested secondarily for closure of the donor site by adapting this policy, possibility of disruption due to tension became minimal.

Actually, fasciocutaneous flaps better used in...
males. The abundant fat in females may impair blood supply and delay healing. Moreover, co-
morbid conditions which are the primary causes
for most of the lesions in the perineal area, add
more difficulty to the wound healing process
(Figure 5).

Repair strength varies considerably with
the repair method, including blood supply, size
and design of the flap. V-Y advancement flap is
easier to execute. The flap has an excellent blood
supply (based on a perforator with no tension
in closure), filling and obliteration of the defect
and can be raised safely without dissecting of
the pedicle and filling and obliteration of the
defect. It is a robust flap, which can be quickly
harvested, and has got a lesser learning curve.

Despite the limited number of patients, this
technique is simple and reliable and offers an
effective and elegant alternative to the more
classic operations for problematic wounds in
lower limb as it has the advantage of being
tension-free closure without leaving dead space
and no need for drains, thus increasing patient
comfort and wound healing, and decreases the
length of hospital stay with early return to work.
Careful planning of the flap and hearing of
perforators by Doppler probe is mandatory. The
night before operation, three successive rectal
enema after light supper are needed. Purse string
suture around the anal verge with 1 silk suture
is the first step to prevent fecal contamination of
field. After elevation of the flap, intraoperative
Doppler is used for confirmation of blood
supply to the flap. No undermining is made to
close the vertical limb of the V-Y flap. Creation
of potential spaces may lead to collection and
wound disruption. Save the time and improve
healing by suturing the flap in one layer. Any
sutures included the fatty layer or fascia may
impair vascularity and produce fat necrosis and
wound infection in consequence.

Constipating measures and avoidance of
pressure on the flap for the first 10 days are
very important for successful outcome. Drains
removed when the amount is less than 25 ml and
clear yellow in color. Treatment of the wound
like an abscess rather than a surgical wound is
like a unique character of this area. In summary,
Time-honored principles of replacing like with
like and delivering well-vascularized tissue
remain for defects in the perineal area. Filling
and obliteration of the cavity is the cornerstone
for good healing and minimizing recurrence of
the lesion.

The ideal reconstruction is not by doing free
flaps or by using advanced expensive tools but
by providing simple, durable coverage with less
morbidity to donor and recipient sites. Pedicled
flaps has the upper hand for reconstruction in the
gluteal area. Design of the flap as a V-Y ensures
safe coverage with closure of donor site primarily.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

1 Chen TH. Bilateral gluteus maximus V-Y
advancement musculocutaneous flaps for the
coverage of large sacral pressure sores: revisit
2 Siclovan HR, Azar S. Use of bilaterally
pedicled V-Y advancement flap for reconstruction of the nose. Aesthetic Plast
3 Hayashi A, Maruyama Y. Bilateral latissimus
dorsi V-Y musculocutaneous flap for closure
of a large meningomyelocele. Plast Reconstr
4 Akan IM, Ulusoy, MG, Bilen BT, Kapucu
5 Aoki R, Pennington DG, Hyakusoku H. Flap-
in-flap method for enhancing the advancement
of a V-Y flap. Plast Reconstr Aesthetic Surg
6 Aoki R, Hyakusoku H. Pacman flap method.
7 Coombs CJ, Thomas DJ. The Manta Ray flap:
a technique for first web space release. Tech
8 Ersoy B. A new flap design for release of
parallel contracture bands: dual opposing five-
9 El-Sabbagh AH. How to do coverage of pre
patellar lesions by cone flaps. Update Plast
10 Pontes L, Ribeiro M, Vrancks JJ, Guimaraes J.
The new bilaterally pedicled V-Y advancement
flap for face reconstruction. Plast Reconstr
11 Micali E, Carramaschi FR. Extended V-Y
latissimus dorsi musculocutaneous flap for
anterior chest wall reconstruction. Plast


