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Ideas and Innovations

Anterolateral thigh flap for phalloplasty - Gandhi Hospital technique: An innovative method

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ABSTRACT

The objective of this paper is to report on the innovative technique of using Anterolateral Thigh Fasciocutaneous Thigh Island flap for the reconstruction of penis following Electrical Burns .This is an addition in the armamentariom of reconstructive surgeon doing phalloplasty. The advantages are that this is a single stage procedure, in the same operative field, can be undertaken under Epidural anesthesia and can be undertaken in a place without infrastructure to perform a microvascular surgery. In addition, we presume that the flap will have similar sensation as the penis to an extent.

KEY WORDS

Anterolateral thigh flap, penile loss, phalloplasty

INTRODUCTION

A 25-year-old, unmarried male, presented with near total loss of the penis following an electrocution 3 years ago. He had to squat to pass urine and did not have any significant erection. The pubic region was scarred and the remnant of corporal bodies appeared as a buried penis. The defect was classified as Type II with the urethral meatus at the tip of the penile stump, which measured 2.5 cm [Figure 1].

Initially we attempted a penile lengthening procedure by dividing the suspensory ligaments and advancing the corporal body and covering the defect with skin graft. This gave an additional length of 2 cm; the total length thus obtained being 4.5 cm. This was still inadequate as a satisfactory organ.

We then used an anterolateral thigh pedicled flap for phalloplasty and urethroplasty as follows. An anterolateral thigh flap with dimension of 15 x 11 cm was marked on the right thigh [Figure 1]. The vascular pedicle arising from the descending branch of the circumflex femoral artery was dissected out and isolated till its origin from the *Profunda femoris* to gain 1 cm length [Figures 2-5]. The flap was thinned at the periphery and tunneled below the *Rectus femoris* and the *Sartorius* so that the pedicle was safely placed deep to the muscles. This flap was delivered at the Pubic region to the penile stump as an island flap. The distal 4.5 cm of the flap was folded with raw surfaces facing each other. This folded part was tubed to become the neo urethra [Figure 6] and was anastomosed to the periurethral skin of the penile stump over a 16 F silastic catheter [Figure 7]. The proximal skin of the flap was tubed with skin outside to join penile stump and thus formed the phallus body. The dimension of the reconstructed penis was 9 cm.

The catheter was removed after 3 weeks. The patient is able to void urine through the neo urethra like a male in

Figure 1: ALT marked on Rt. thigh penile stump

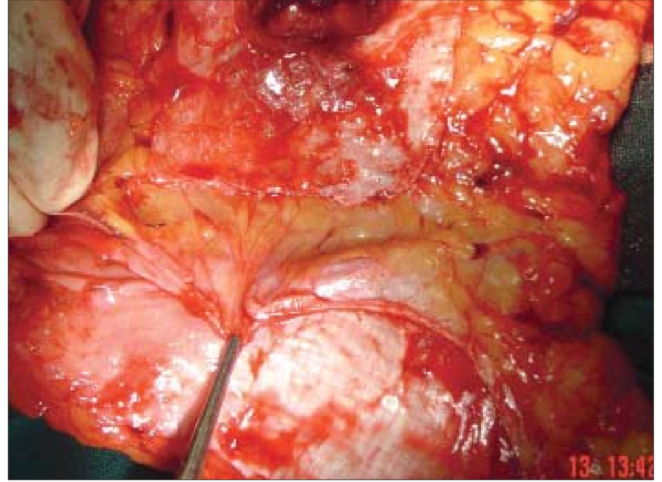

Figure 4: Flap dissection showing the fat under the flap

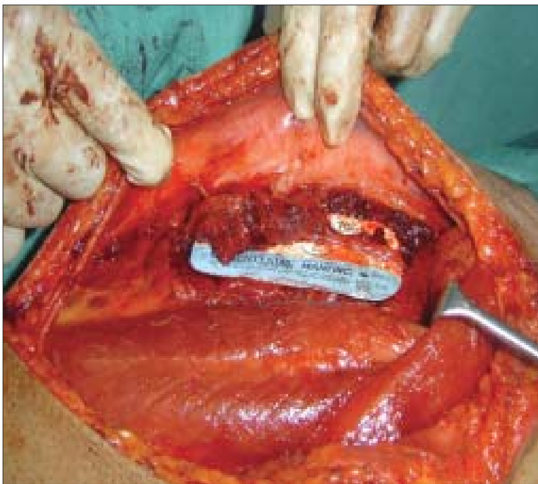

Figure 2: Flap raised showing the perforator arising from the descending branch of femoral

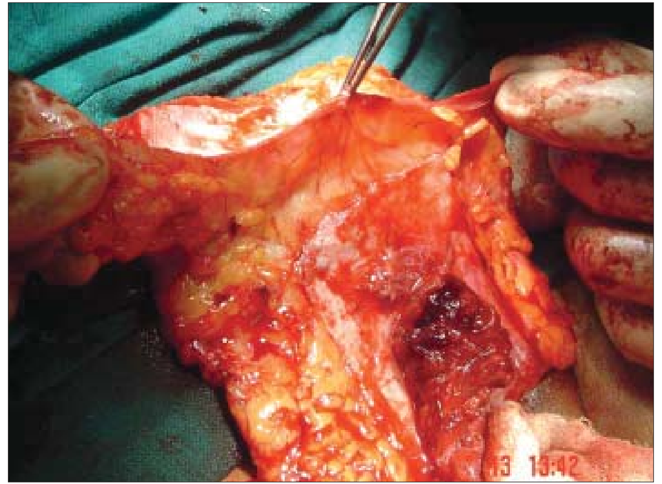

Figure 5: Flap dissection showing the fat under the flap

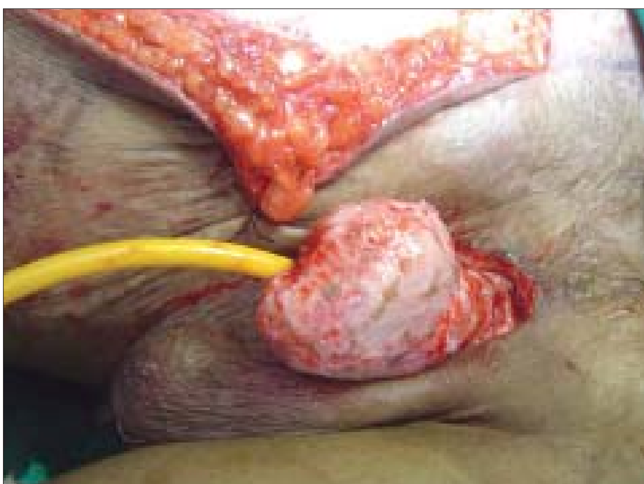

Figure 3: Flap dissection showing the fat under the flap

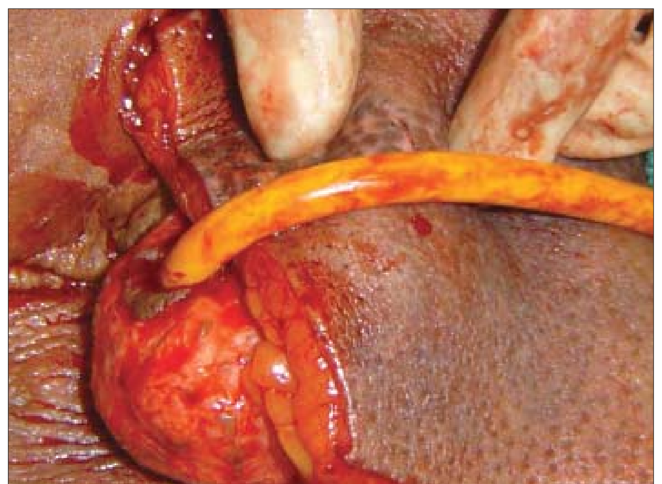

Figure 6: Folding of the thinned distal end of the flap to form neourethra note the lie of the flap after tunnelling

the erect posture [Figure 8]. He also reports some erectile function occasionally. His ability to have a satisfactory intercourse needs to be evaluated later.

DISCUSSION

The Anterolateral thigh flap is a versatile flap,[1] having a

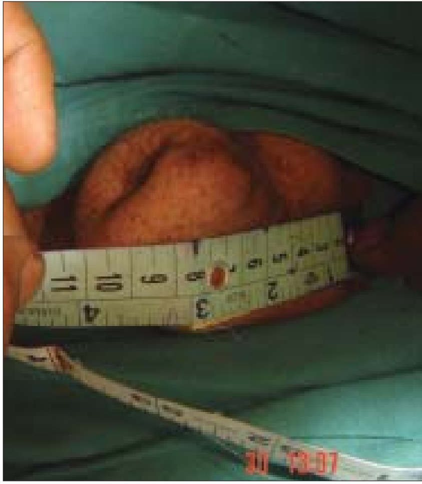

Figure 7: Length oh the phallus on a scale

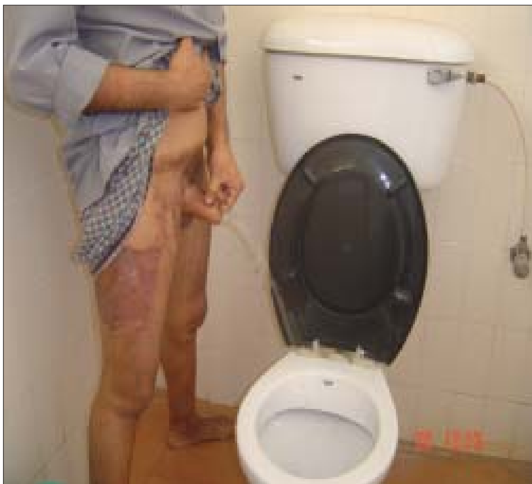

Figure 8: Micturating

consistent blood supply through perforators arising from the Anterolateral circumflex femoral artery that is a branch of *Profuda femoris*. It is a fasciocutaneous flap that has been successfully used as a free flap in lower limb defects following trauma.[2,3] The use of this flap for phalloplasty has not been reported in literature.

The subtotal or total amputation of the penis upsets the urodynamic function of the penis and causes the patient a major psychological trauma. It is equally challenging to the surgeon. The penis has two states, the flaccid and the erectile state and it fulfills two functions, that is of voiding urine like a male and depositing semen into the vagina. This calls for a reasonable size of the phallus with ability to navigate into the vagina and above all a satisfactory sensation for adequate sexual function. The anterolateral flap is reasonably thin without muscle bulk. The pedicle length is adequate for manipulation as an island flap. The vascular bundle is islanded beneath *Sartorius* and *Rectus femoris* muscle and is thus well padded.

It is easy to dissect, can be done by a junior surgeon without much expertise and heavy infrastructure like microvascular set up. Being in the vicinity of the pubic region it has a better match of color, texture and sensation for a penile reconstruction. It is a single stage procedure. The morbidity of the donor site is minimal. The entire surgery can be done under a spinal anesthesia and the operating time is about 2 hours. An implant can be introduced either at the time of surgery or at a later stage.

CONCLUSION

The anterolateral thigh flap as an island, interpolation pedicle flap is a useful procedure that can be added to the armamentarium for phalloplasty after loss of penis following electrical burns and other trauma.

REFERENCES

1 Koshima I, Fukuda H, Utumomiya R, Soeda S. The Anterolateral thigh Flap: Variations in the Vascular Pedicle. Br J Plast Surg 1989:42:260-2.
2 Song YG, Chen GZ, Song YL. The free thigh flap: A new free flap concept based on the Septocutaneous artery. Br J Plast Surg 1984;37:149-59.
3 Thow G, Qiao Q, Chen GY, Ling YC, Surft R. Clinical experience in surgical anatomy of 32 anterior lateral thigh flap transplantations. Br J Plast Surg 1991:44:91.