

Neuropraxia In tissue expansion - should not delay reconstructive process

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Abstract

INTRODUCTION

Tissue expansion has come a long way Since Neumann₁ first used the principles of controlled tissue expansion in 1957 and Radovan's_{2, 3} description of a tissue expander in breast reconstruction in 1982.

Tissue expansion has numerous advantages.

- it provides skin with a near-perfect match in color and texture, minimal donor site morbidity and scarring occur (Austad, 1982; Pasyk, 1982)⁴.
- It has superior sensation e.g. in breast reconstruction. ^{2, 3}
- Expanded flaps are more resistant to bacterial invasion than random cutaneous flaps (Barker, 1987).⁵
- Retains adnexal characteristics the hair-bearing flaps designed in the treatment of male pattern baldness.^{6, 7, 8}

Though safe and effective tissue expansion has its own complications we highlight a case of neuropraxia of ant cutaneous nerve of thigh as a complication of tissue expansion and propose a management plan which should not delay the reconstructive process.

CASE REPORT

In August 2000 18 yr old girl was involved in a RTA. She sustained multiple injuries including bilateral femoral fractures and large soft tissue defects to right and left thigh and buttocks particularly on the left hand side

She had initially had internal fixation of fractures defunctioning colostomy and debridement and skin graft. In

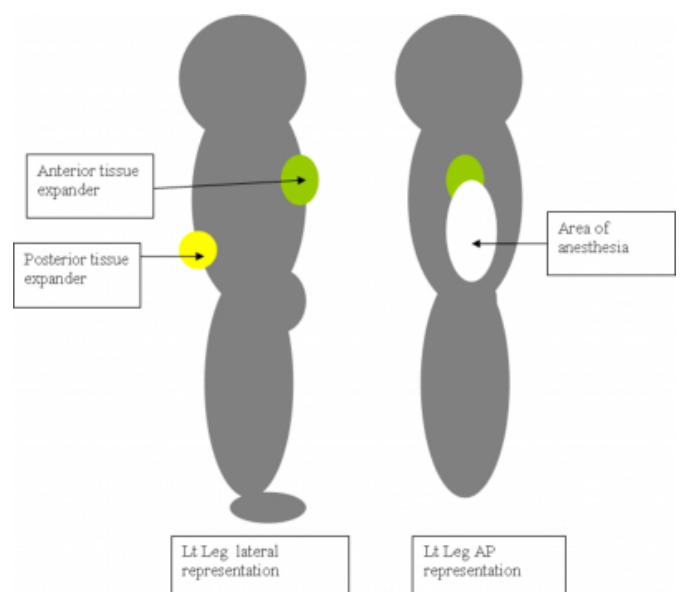
October 2001 cable graft was done using sural nerve bilaterally (20 cm) and closure of colostomy in Jan 2002. Since 2005 she has had serial scar revisions and tissue expansion for reconstruction.

In June 2006 she had tissue expanders sited in left upper thigh anteriorly inamed 1000 cm³ and lower thigh posteriorly inamed 800cm³ in late September 2006 she had 775 mls in ant thigh and 428 mls in post thigh . She developed numbness of ant cutaneous nerve of thigh since expansion, skin was viable and 30 ml. saline was removed from ant expander.

In October she had removal of expanders and flap rotation and re-sitting of tissue expander for further surgery.

The nerve recovered fully in Feb 2007 and further expansion and flap advancement has been planned.

Figure 1



DISCUSSION

Tissue expansion is a widely used and a well researched topic in field of reconstructive surgery. Antonyshyn⁹, Austad¹⁰, Youm¹¹ and Casonova¹², have studied in detail their cohorts and reported the possible complications of the technique .

Tissue expanders are known to be related with complications of ^{9,10,11,12}

Transient pain, Infection, Capsule formation, Hematoma, Intractable pain, Striae Valve exposure, implant exposure, and Bone resorption.

Avoidance of complications of tissue expansion requires careful outpatient observation and consistent follow up.¹¹

No other published report has discussed treatment modality and time delay of neuropraxia in tissue expansion.

Neuropraxia though a complication of tissue expander can be treated with deflation and rest to the nerve and is totally reversible. If overlooked there is a possibility of ischemic nerve damage and permanent nerve injury.

Once the pressure is relieved the reconstruction process can be resumed with due care taken not to over stretch the tissue. The nerve recovery in our case was not hampered by the flap repositioning.

Unlike bone resorption , implant extrusion , infection and striae formation which delay the reconstructive process , the

expansion related neuropraxia should not be a reason to delay reconstructive procedure as flap advancement does not appear to alter nerve recovery .

References

1. Neumann CG: The expansion of an area of skin by progressive distention of a subcutaneous balloon. *Plast Reconstr Surg* 1957;19:124
2. Radovan C: Breast reconstruction after mastectomy using the temporary expander. *Plast Reconstr Surg* 1982 Feb; 69(2): 195-208.
3. Radovan C: Tissue expansion in soft-tissue reconstruction. *Plast Reconstr Surg* 1984 Oct; 74(4): 482-92
4. Austad ED, Thomas SB, Pasyk K: Tissue expansion: dividend or loan? *Plast Reconstr Surg* 1986 Jul; 78(1): 63-7
5. Barker DE, Dedrick DK, Burney RE, et al: Resistance of rapidly expanded random skin flaps to bacterial invasion. *J Trauma* 1987 Sep; 27(9): 1061-5
6. Adson MH, Anderson RD, Argenta LC: Scalp expansion in the treatment of male pattern baldness. *Plast Reconstr Surg* 1987 Jun; 79(6): 906-14.
7. Anderson RD: Expansion-assisted treatment of male pattern baldness. *Clin Plast Surg* 1987 Jul; 14(3): 477-90.
8. . Leonard AG, Small JO: Tissue expansion in the treatment of alopecia. *Br J Plast Surg* 1986 Jan; 39(1): 42-56
9. Antonyshyn O, Gruss JS, Mackinnon SE, Zuker R: Complications of soft tissue expansion. *Br J Plast Surg* 1988 May; 41(3): 239-50[Medline]
10. Austad ED: Complications in tissue expansion. *Clin Plast Surg* 1987 Jul; 14(3): 549-50
11. Youm T, Margiotta M, Kasabian A, Karp N: Complications of tissue expansion in a public hospital. *Ann Plast Surg* 1999 Apr; 42(4): 396-401; discussion 401
12. Tissue expansion of the lower limb: complications in a cohort of 103 cases Casanova D, Bali D, Bardot J, Legre R, Magalon G. *Br J Plast Surg*. 2001 Jun;54(4):310-6.
13. Cherry GW, Austad E, Pasyk K, et al: Increased survival and vascularity of random-pattern skin flaps elevated in controlled, expanded skin. *Plast Reconstr Surg* 1983 Nov; 72(5): 680

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