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Alessandro De Cassai*
Paolo Persona
Department of Medicine - DIMED, Section of Anesthesiology and Intensive Care, University of Padova, Padova, Italy

* Corresponding author.
E-mail address: alessandro.decassai@gmail.com (A. De Cassai)
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Letter to the Editor

Percutaneous mesh expansion

Fig. 1 – XXX.

1.   Introduction

We have always been involved in Mesh skin expansion since our inception in 1964. In several publications we have persued the evolution of the Mesh technique and in 1977 we analyzed the implementation of diverse parameters in **the surface expansive-ratio of a mesh**.

We like to comment on the technique which in our opinion erroniously is named

«percutaneous Mesh expansion».

A recent innovative method of scalp expansion was called "percutaneous mesh expansion" [1].

However no "mesh" pattern of the skin is obtained but *d*ispersed staggered hand-made stab wounds are done as needed, to relieve skin tension.

Active mesh-expansion of the skin on the surface should follow a specific mathematic.

Their expansion in the dept is gained from multiple needle release of restraining subcutaneous and low-dermal fibers, engaging the upper skin layers [2].

So, let's call this *method* rather "percutaneous tissue expansion".

For illustration of our mesh- principle, let us start off with a simplified theoretical **unit** consisting of two juxtaposed ribbons with a cut between (Fig. 1).

2.   Initial situation

l length of cut
    g gap between cuts
    d distance between rows
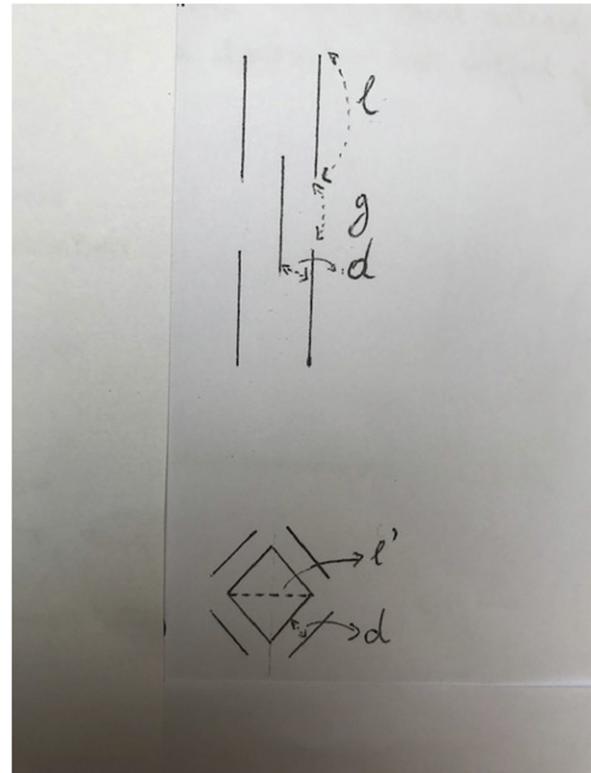   Initial horizontal length = 2d for 1 unit

Vertical length $(l + g)$
Surface $= 2d \times (l + g)$

3.   On expansion

Vertical l becomes $l' = 0.7\,l$
    horizontal length is now $2d + l'$
    surface is $(2d + 0.7\,l) \times (0.7\,l + g)$
    g is practically negligible.
    The surface becomes (vertic × horiz.) $= 1.4\,dl + 0.49\,l^2$ The ratio of gain (expansion/initial surface) $= (1.4\,dl + 0.49\,l^2)/2\,dl$ $0.7 + 0.25\,l/d$ At the best, we assume for the needle cuts: $d = g = l = 2\,mm$ If it would become a mesh as named, the gain-ratio would be $0.7 + 0.25\,(2/2)$ 0.95

i.e. "no mesh = no gain".

Real surface gain cannot be obtained from such a mesh attempt but rather from hidden subcutaneous tissue release. For a circular defect, maximal expansion is *only* needed at the center.

Obviously the TVB formula [3], erroneously quoted as a "Bostwick formula", devised for a large surface gain as a *b*urn does not apply for a limited unidirectional surface gain dependent on underlaying tissue release and aided by tissue stretching under tension. For the same purpose, the above mentioned formula can be useful, always without undermining the donor skin and eventually with relatively short incisions.

Nevertheless, the needle-tissue release can be an harmless but useful adjunct.

Conflict of interest

Acknowledgement

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J.J. Vandeput*
M. Nelissen
Leopoldplein 50, 3500 Hasselt, Belgium

* Corresponding author.
E-mail address: valerie@globalcareclinic.com (J. Vandeput).

Letter to the Editor

Burns surgery antiseptic preparation: A UK national survey

Dear Editor,

Patients with burn wounds are extremely susceptible to infections due to disruption of the physical and immune barrier against invasion and colonisation of microorganisms. Burn wound infections are a major source of morbidity and mortality worldwide. Topical antiseptic agents are used to clean burn wounds to prevent growth of microorganisms, helping to prevent infection and promote wound healing. The aim of this study was to survey which antiseptic agents and regimes are currently being used across UK burns services and evaluate any differences in practice.

1. Method

We conducted a nationwide telephone survey of nineteen UK burns services during September 2018 to find out which theatre antiseptic agents are being used and the number of preparations being performed.

2. Results

Nine units (47%) used a single preparation regime, three units (16%) used a 'social clean' followed by a final preparation regime and seven units (37%) used two 'social cleans' followed by a single final preparation regime. Amongst the preparation agents used, chlorhexidine was the most popular, used in fifteen units (78%) as a single agent or in combination with other agents. Povidone-iodine was used in twelve units (63%) and Prontosan® (B.Braun Melsungen AG, Carl-Braun-Straße 1, Melsungen, Hessen 34212, Germany) in one unit (5%). A combined regime of povidone-iodine and chlorhexidine preparations was used in seven units (37%).

3. Discussion

Topical antiseptics are felt to be an important component of burn wound care together with anti-microbial dressings and early surgical excision and grafting to prevent infections. Povidone-iodine (oxidiser) and chlorhexidine (emulsifier) preparations have similar broad-spectrum activity and are the most popular agents used in UK burn care. A recent systematic review showed that few studies have compared the two antiseptics in burn wounds but there is low certainty evidence that average time to wound healing maybe slightly shorter in patients treated with povidone-iodine [1]. Interestingly, several recent studies have shown a combination of skin preparation with chlorhexidine and povidone-iodine reduces surgical skin site infections compared to povidone-iodine or chlorhexidine alone in clean surgery [2]. Data was collected from various individuals in each burn service including consultants, junior doctors and scrub nurses. Our results may therefore not represent the full spectrum of intra-departmental variations within each burn service.

4. Conclusion

Wound infection is a major challenge in burn care. Our survey has identified the variation in the antiseptic agents and regimes used in UK Burns services. There is currently a lack of high-quality evidence favouring the use of povidone-iodine alone, chlorhexidine alone or in combination in burn wounds. Further research is required to evaluate which antiseptics lead to the greatest reduction in burn wound infection and therefore better outcomes for patients. Perhaps in the future such evidence could lead to a standardised evidence-based regime between burns services.