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Alexander J. Baldwin*
College of Medical and Dental Sciences, University of Birmingham, Edgbaston, Birmingham B15 2TT, United Kingdom

* *Correspondence to*: East Whinfel, Sheep Plain, Crowborough, East Sussex TN6 3ST, United Kingdom.
E-mail address: alexbaldwin1010@gmail.com (A. Baldwin).

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Letter to the Editor

Electric arc path on lungs

Dear sir,

A 43 years old man sustained second and third degree burns injuries (40% body surface) after a work-related high voltage electrical trauma Electric arc entered at the right hand and exited at the left foot; patient underwent fasciotomy at the left leg at hospital arrivals.

Both oro-tracheal intubation and Extra Corporeal Membrane Oxygenator (ECMO) support were needed in order to have acceptale gas exchange.

ECMO support lasted seventeen days. Lungs imaging depicts the path of the electric arc both on chest radiography (CR) (Fig. 1, Panel A) and on computed tomography (Fig. 1 Panel B and C). showing atelectasis on the right lung (upper lobe) and on the left lung (lower lobe). Althought lung damage was visible immediatly after the injury, it was more clear on the CR on the fourth post-injury day. We discharge the patient from the intensive care unit after forty days while lungs damage was still visible on CR.

Internal organs damage is uncommon but non exceptional expecially after a high-voltage trauma, pathophysiologic mechanism is complex and is related both to thermal and to electric energy; althought the whole cell is damaged there is a predominant damage to the cell membrane [1] with direct electro-conformational denaturation of macromolecules such as proteins [2]. To our knowledge this is the first report of a clear electric arc path on the lungs.

Declarations of interest

The authors declare not to have any conflicts of interest.

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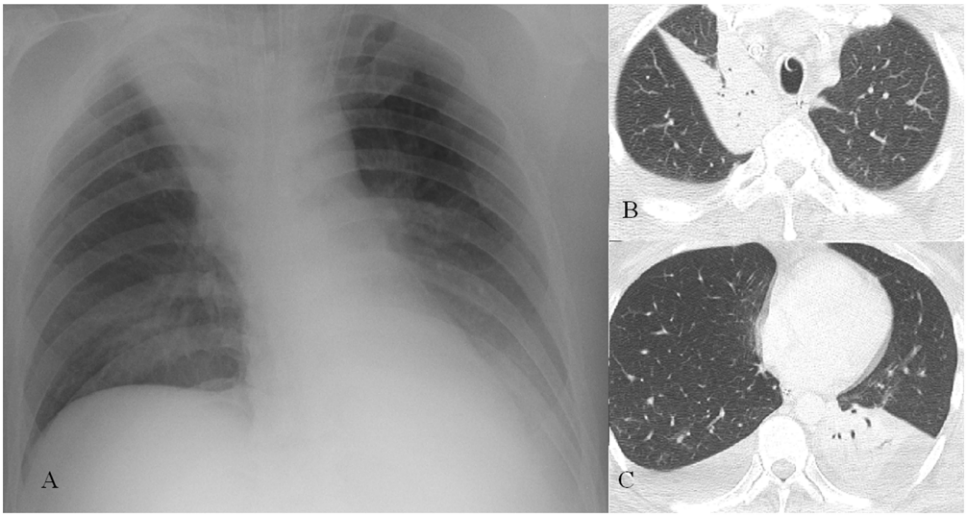

Fig. 1 – Chest radiography and computed tomography at fourth post-injury day. Panel A: Chest radiography clearly depicts the electric arc. Panel B: right lung showing upper lobe damage. Panel C: left lung showing lower lobe damage.

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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

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

llength of cut
ggap between cuts
ddistance between rows
Initial horizontal length = 2d for 1 unit

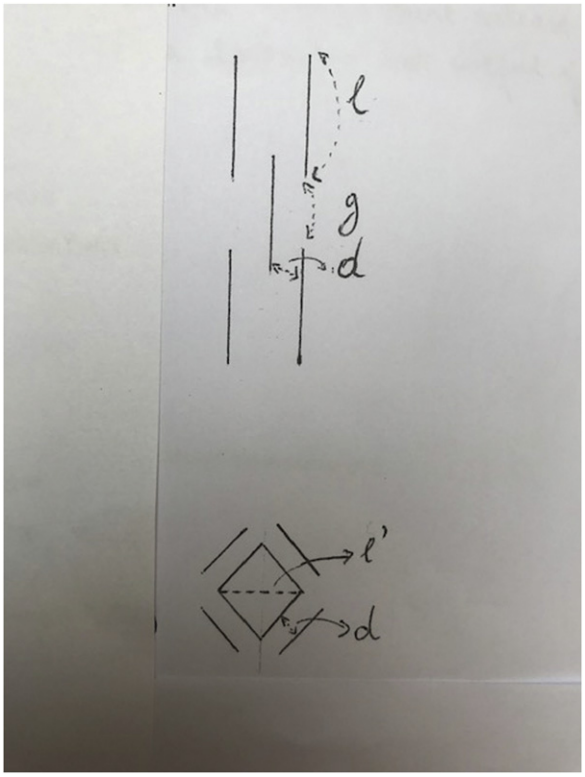

Fig. 1 – XXX.

Vertical length (l + g)
Surface = 2d × (l + g)

3. On expansion

Vertical l becomes l' = 0.7 l
horizontal length is now 2d + l'
surface is (2d + 0.7 l × (0.7 l + g)
g is practically negligible.

The surface becomes (vertic × horiz.) = 1.4 dl + 0.49 l^2The ratio of gain (expansion/initial surface) = (1.4 dl + 0.49 l^2)/2 dl 0.7 + 0.25 l/dAt the best, we assume for the needle cuts: d = g = l =2 mmIf 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], erroniously 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 under-mining the donor skin and eventually with relatively short incisions.

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