

# Collagen plus alginate wound dressing for the treatment of split-thickness skin graft donor sites: a cost-effectiveness study

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## Introduction:

The collagen plus alginate dressings for donor sites have been used in our country by our team, since 2003. Before that, the use of rayon was the main and only preference of use. We were looking for something new, less painful and with a better cost-benefit relation. This alternative dressing seemed to be a good option. We started a study to evaluate the use of collagen calcium-alginate dressing for donor sites.

## Methods:

A prospective clinical study was conducted for 2010 to 2017.

Patients were selected consecutively and randomly allocated into two groups according to the treatment used on the donor site:

- **Rayon group:** rayon soaked in 0.9% saline and rayon covered with sterile cotton gauze and bandage.
- **Group collagen with alginate:** 90% bovine collagen with 10% calcium-alginate dressing covered with transparent polyurethane film.

**Parameters analyzed:** pain, time to epithelialization, length of stay and costs.

The study was approved by the Research Ethics Committee of HC-FMUSP.

Patient discharge was related to the time taken to restore the donor area.

All patients responded in relation to local pain in the first 48 hours and on subsequent days according to the analogue-visual pain scale, graded from 0 to 10

**Average daily cost of other materials used:** liquid vaseline US\$ 0.09; transparent polyurethane film US\$ 0.68; rayon gauze dressing US\$ 0.86; bovine collagen dressing associated with calcium alginate US \$ 33.01, each unit.

## Statistical analysis:

- **Program:** Statistical Package for the Social Sciences, 18.0 (SPSS Inc., Chicago, IL, USA)
- **Continuous variables:** mean and standard deviation
- **Group analysis:** Student's "t" test for paired samples
- **Significance:**  $p < 0.05$ .



Fig 1: Donor area treated by rayon on display.



Fig 2: Donor area treated with a collagen dressing with alginate covered with transparent polyurethane film

## Results:

**Studied:** 30 patients (20 male (66.7%) and 10 female (33.3%)). Age: 12 to 60 years.

**Rayon group:** 15 patients; **Collagen group:** 15 patients

**Pain scale:** rayon group - initial scores ranged from 6 to 10, significantly higher ( $p < 0.01$ ) when compared to the group treated with collagen and alginate dressing - after 48 hours, this dressing was still superior to the dressing with rayon in terms of pain reduction in the donor area ( $p < 0.01$ ), with a decrease in pain levels around 79.5%.

The length of hospital stay ranged from 5 to 16 days (mean  $9.5 \pm 3.9$  days). In the rayon group, this time varied from 11 to 16 days (mean  $13 \pm 1.6$ ). This result was significantly higher ( $p < 0.001$ ) in relation to the collagen and alginate group, whose length of stay ranged from 5 to 7 days (mean  $5.8 \pm 0.5$ ). Average length of stay of patients treated with exposed rayon was  $13.8 \pm 1.8$  days, while for those treated with rayon covered with gauze and bandage it was  $12.2 \pm 0.9$  days, with no statistically significant difference. ( $p = 0.058$ ).

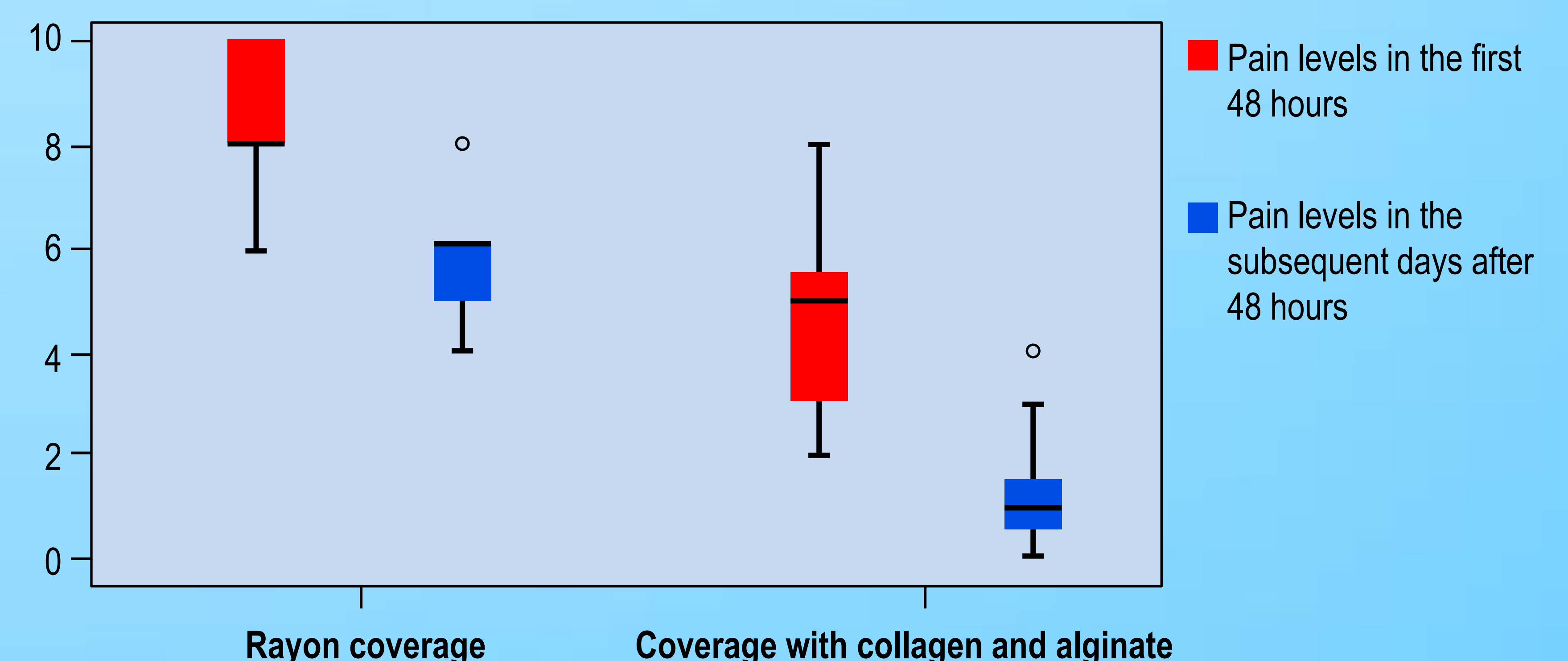
There was less time for tissue restoration with the use of a collagen dressing with alginate compared to the use of rayon.

**Overall average cost:** US \$  $381.44 \pm 120.07$ . Analyzing by subgroup, these costs were significantly higher in the rayon-treated group ( $p < 0.001$ ).

Average total cost: rayon group was US \$  $514.11 \pm 60.41$  and collagen and alginate group US \$  $272.31 \pm 22.88$ .

The use of collagen and alginate dressing provided an average reduction of around 47% in the final cost of hospitalization per patient.

Fig 3. Local pain in the donor area in the first 48 hours and after 48 hours and subsequent days of using rayon and collagen and alginate coverage.



## Conclusions:

Collagen calcium-alginate dressing showed a better cost-benefit relation, with significant reduction of pain, epithelialization time and length of stay.