



# Different thickness split-skin graft use in postoperative and traumatic wound management

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**Introduction:** Regardless having a relatively old history and modernization over the past century, skin transplantation remains one of the most common surgical interventions for skin defect coverage applied today [1,2]. Modern equipment has allowed for different thickness split graft use. This inevitably has called for recommendations which would guide specialists in choosing the graft thickness that would facilitate better wound healing, minimal damage to the donor site and best aesthetic outcomes [2,3].

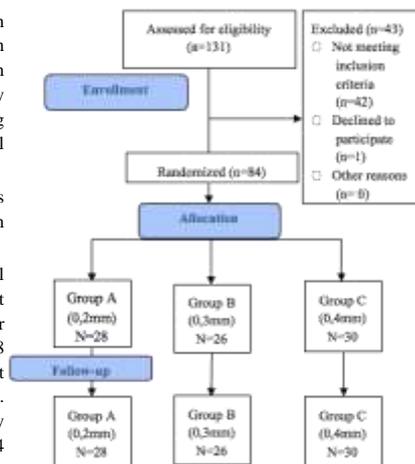
**Aim:** To compare donor and recipient wound healing after different thickness split-skin grafts (SSG) are used to cover traumatic or postoperative skin defects.

**Method:** A single-center randomized, controlled, parallel-group clinical trial was conducted to compare donor and recipient wound healing after different thickness split-skin grafts (SSG) were used to cover traumatic or postoperative skin defects. We included 84 patients between the age of 18 and 70, with defects that were less than 20 % TBSA and who had no relevant comorbidity or therapy applied that may have delayed wound healing (e.g. uncontrolled diabetes, radiation therapy, etc.). Patients were randomly allocated to three different graft thickness groups: 0.2 mm, 0.3 mm and 0.4 mm (Fig 1). STSG was performed using electric dermatome and the all of the grafts were harvested from anterior portion of upper thigh (Fig 2). Postoperatively on days 3, 7, 14 and 28 days we evaluated pain, epithelialization, secretion, erythema, oedema, local temperature and fluctuation. All of the parameters were evaluated on a scale from 0 to 5 (Fig 3).

**Results:** We found that the comparison groups were homogenous by age, gender and wound size in cm<sup>2</sup> (Table 1) as well as wound site. Most of the primary defects were found in lower extremities. Majority of the skin defects were caused by thermal burns (60%), whereas others were post-traumatic (30%) and postoperative (10%).

**Table 1. Patient baseline characteristics**

	Group A (0,2mm)	Group B (0,3mm)	Group C (0,4mm)	P value
Age, years (SD)	52,2 (14,2)	50,5 (16,2)	57,3 (11,5)	0,166
Gender	M 15 (51,5%)	16 (61,5%)	21 (70%)	0,436
	F 13 (46,4%)	10 (38,5%)	9 (30%)	
Wound size, cm <sup>2</sup> (SD)	55,7 (71,8)	55,3 (71)	50 (64)	0,850

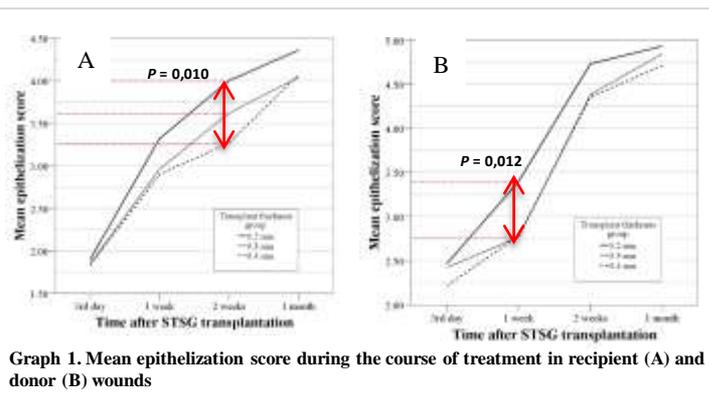


**Fig 1. CONSORT 2010 flow diagram**

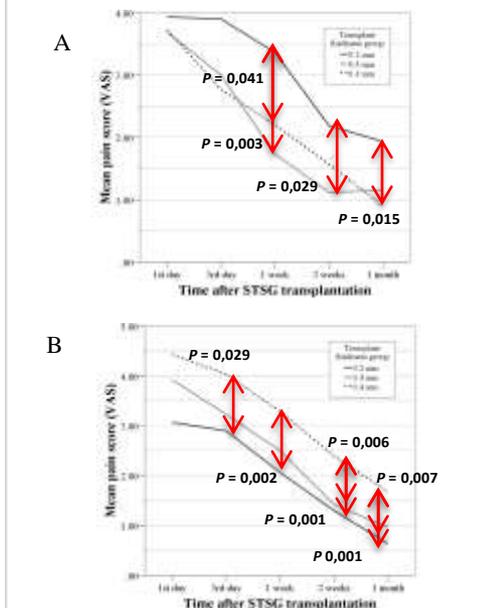


**Fig 2. Electric dermatome used to harvest the SSG**

**Results:** The only significant difference between groups was in epithelialization and pain ( $p < 0.05$ ). The fastest donor and recipient wound epithelialization was identified in 0.2mm STSG group, where donor wounds in 28 patients (93.3%) and recipient wounds in 17 patients (60.7%) were fully epithelialized in 4 weeks. (Graph 1) Pain perception was the highest in recipient wound when 0.2mm STSG was used, whereas donor wound pain perception was the highest in 0.4mm STSG group. (Graph 2)



**Graph 2. Mean pain perception score (VAS) during the course of treatment in recipient (A) and donor (B) wounds**



**Conclusion:** The thickness of the skin graft is a significant factor affecting wound healing parameters. It is necessary to evaluate late outcomes, such as scarring, pigmentation, and esthetic results of skin grafting with different thickness grafts. Hence this study project is continued with the aim to perform a follow up analysis of the patient outcomes 6 months and 12 months after the procedure.

## References

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