

Gulhane Military Medical Academy
Haydarpasa training Hospital

The Effect of Fat Grafting on Random Pattern Skin Flap

Viability

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Nothing to disclose

Objective

The purpose of our study was to determine the effectiveness of fat grafting in the dorsal skin flap survival in murine model

Materials and methods



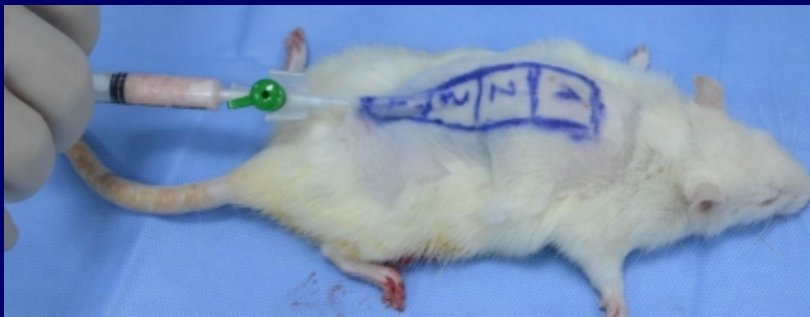
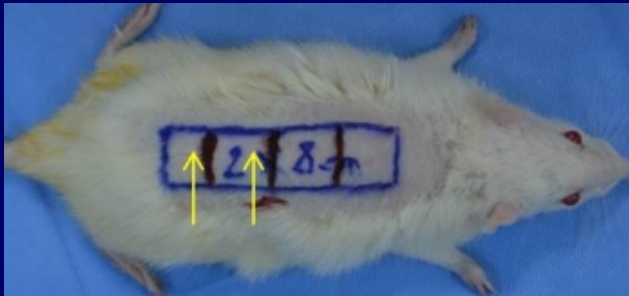
- **Animals and groups**
 - 24 Wistar rats
 - 3 groups
 - Control
 - Saline injection
 - Fat injection

Materials and methods



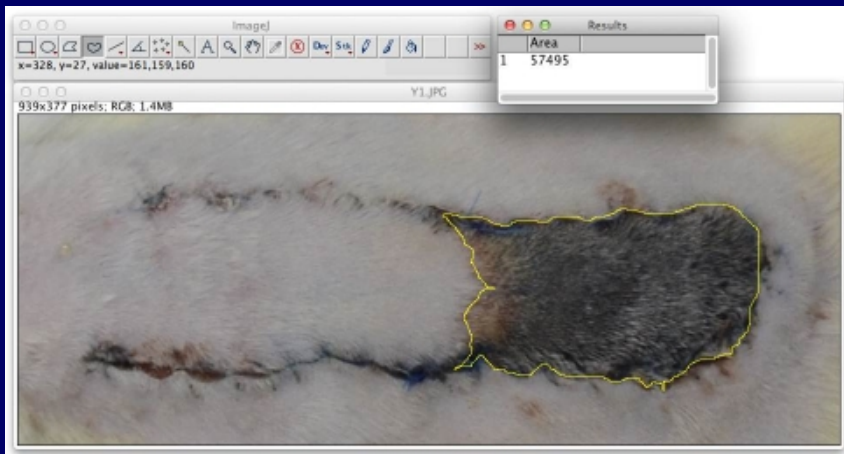
- **Preperation of the fat grafts**
- The inguinal fat pads were harvested bilaterally
- Fat grafts were finely minced
- Became gelatinous

Materials and methods



- Dorsal skin flap model and lipotransfer
- Modified McFarlane flap
- 2 x 8 cm
- Fat grafts were injected to the $\frac{1}{2}$ distal part of the flap in group 3
- Saline was injected to the $\frac{1}{2}$ distal part of the flap
- 10 days later flaps were elevated and sutured back

Materials and methods



- **Flap Assessment**
- At 7 days after the operation
- Necrosis, infection
- Survival percentage
- ImageJ software

Materials and methods



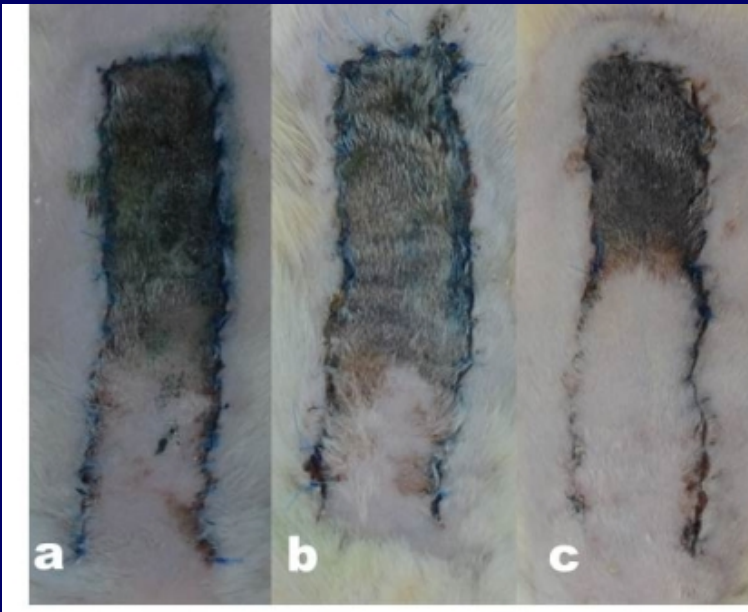
- **Histological assessment**
- Punch biopsies from demarcation line
- Collagen density, inflammation and vascularization
- Semi quantitatively
- +: mild (1), ++: moderate (2), and +++: intense (3)

Materials and methods

- Histological parameters Pearson's chi-squared test (χ^2).
- Differences in the flap survival percentages were analyzed by ANOVA test

Results

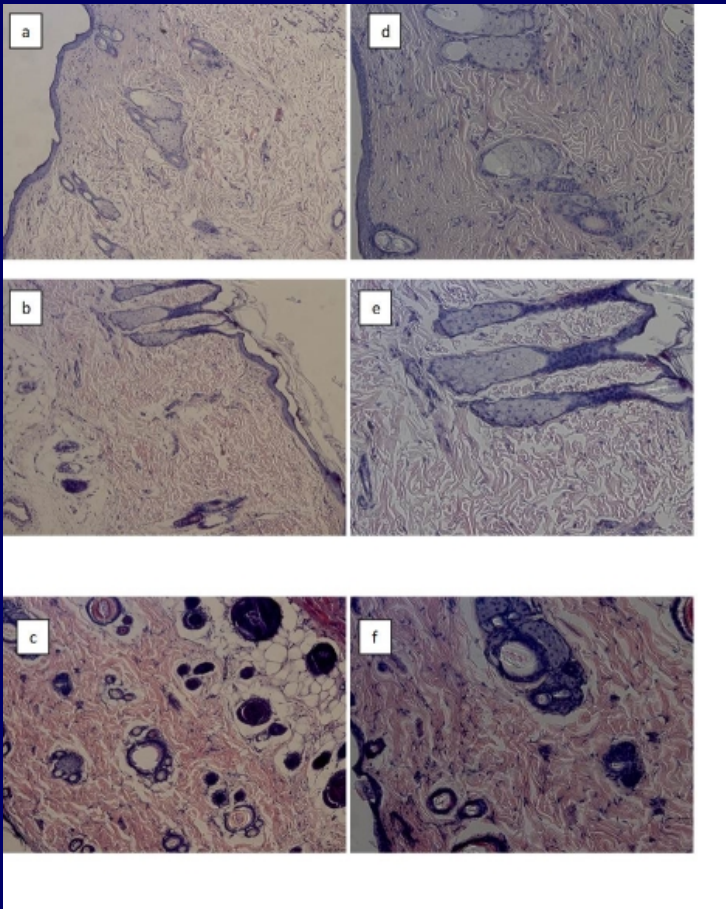
Flap survival



| Group | Flap survival percentage(%) | |
|-----------|-----------------------------|---------------|
| | Mean | Std.deviation |
| Control | 32,1763 | 4,34052 |
| Saline | 23,8200 | 8,97927 |
| Fat graft | 44,7975 | 13,21955 |

Results

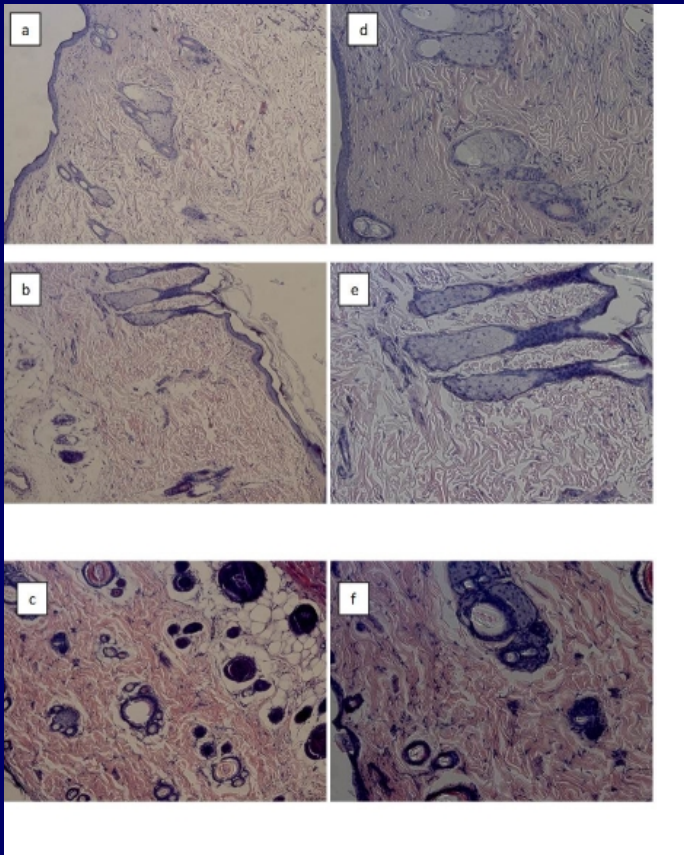
Histopathological findings



| Scores | Collagen density | | | Total |
|--------------|------------------|--------|-----------|--------|
| | Control | Saline | Fat graft | |
| 1 (mild) | 6 | 8 | 0 | 14 |
| | 25,0% | 33,3% | 0,0% | 19,4% |
| 2 (modarate) | 12 | 13 | 14 | 39 |
| | 50,0% | 54,2% | 58,3% | 54,2% |
| 3 (Intense) | 6 | 3 | 10 | 19 |
| | 25,0% | 12,5% | 41,7% | 26,4% |
| Total | 24 | 24 | 24 | 72 |
| | 100,0% | 100,0% | 100,0% | 100,0% |

Results

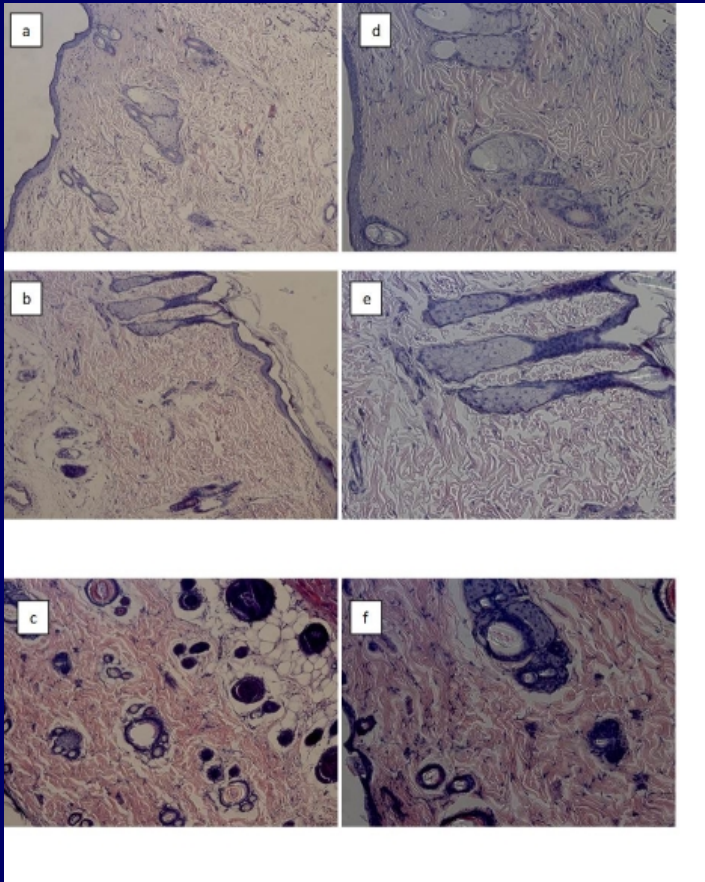
Histopathological findings



| Scores | Inflammation | | | Total |
|--------------|--------------|--------|-----------|--------|
| | Control | Saline | Fat graft | |
| 1 (less) | 17 | 22 | 12 | 51 |
| | 70,8% | 91,7% | 50,0% | 70,8% |
| 2 (modarate) | 7 | 2 | 12 | 21 |
| | 29,2% | 8,3% | 50,0% | 29,2% |
| 3 (Intense) | 0 | 0 | 0 | 0 |
| | 0% | 0% | 0% | 0% |
| Total | 24 | 24 | 24 | 72 |
| | 100,0% | 100,0% | 100,0% | 100,0% |

Results

Histopathological findings



| Scores | Vessel density | | | Total |
|--------------|----------------|--------|-----------|--------|
| | Control | Saline | Fat graft | |
| 1 (mild) | 21 | 21 | 14 | 56 |
| | 87,5% | 87,5% | 58,3% | 77,8% |
| 2 (modarate) | 3 | 3 | 6 | 12 |
| | 12,5% | 12,5% | 25,0% | 16,7% |
| 3 (Intense) | 0 | 0 | 4 | 4 |
| | 0,0% | 0,0% | 16,7% | 5,6% |
| Total | 24 | 24 | 24 | 72 |
| | 100,0% | 100,0% | 100,0% | 100,0% |

Significance of the findings

Fat grafting could increase viability random pattern skin flaps as well as ADSCs and SVF